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ABSTRACT

The German education system is directly influenced by a set of principles which come from social, cultural, and political realms in Germany. This document provides a detailed and comprehensive treatment of four key academic and nonacademic factors that are of interest to U.S. policymakers. They are: (1) national standards in education; (2) teachers' preparation and working lives; (3) the role of school in adolescents' lives; and (4) how students' differences in ability are managed by the school system. This qualitative information provides the supplementary contextual information necessary for educators to assess and interpret the quantitative data collected through the Third International Math and Science Study (TIMSS). Chapter titles are: (1) "Introduction"; (2) "The Development and Implementation of Education Standards in Germany"; (3) Individual Differences and the German Education System"; (4) "The Role of School in German Adolescents' Lives"; and (5) "Teachers and the Teaching Profession in Germany." References for further reading are included. Contains 81 references. (Author/LB)

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The Educational System in Germany: Case Study Findings

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The Educational System in Germany: Case Study Findings

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Acknowledgments

During the 3 months my colleagues and I spent in central, eastern, and southern Germany in 1994, we encountered, with few exceptions, individuals who were eager to share their experience, knowledge, and insights with us. Conversations lasted anywhere from an hour to several hours, sometimes with follow-up appointments. The people who agreed to participate in our study represented a broad spectrum of German society in terms of ethnicity, gender, social class, educational and professional background, political affiliation, and age. They provided us with a wealth of information about standards, individual ability differences, teachers' lives, and the role of school in young people's lives, as well as a variety of related topics.

We have written this book so that it can be understood by the nonspecialist. Our goal is to provide a detailed and comprehensive treatment of four key academic and nonacademic factors, which are of interest to U.S. policymakers. We have included references at the back of the book that can be used as a list of further reading for those who are interested in learning more or focusing on a specific area.

In addition to the participants, we wish to thank many other people who contributed to this volume. In particular, we would like to thank the project director, Harold Stevenson, co-director Shinying Lee, and Roberta Nerison-Low, administrative director and author of the chapter on ability differences, and the entire staff of the Center for Human Growth and Development at the University of Michigan. We also wish to thank Lois Peak, U.S. Department of Education, who was the project officer who planned and monitored this Case Study.

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Mark A. Ashwill, editor
Buffalo, NY

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Executive Summary

Germany's tradition of formal education dates back to the 1800's, when the three-tiered school system originated. Historically, the highest levels of education were reserved for a small percentage of the population, while the majority received a basic education followed by training in particular trades or vocations. As the economic strength of the country has grown, the number and variety of jobs requiring higher levels of education have increased, and a growing percentage of the school-age population has pursued study at the *Realschule* and the *Gymnasium* in order to achieve higher levels of certification. While the lowest level secondary school form (the *Hauptschule*) has become less popular, it continues to educate nearly 30 percent of German students, leading them to vocational training programs in their adolescent years and into the work force as they approach their late teens.

The responsibility for primary and secondary education in Germany rests with state and local authorities. School funding derives primarily from the state level, and a redistribution of tax revenues among states gives them comparable budgets for funding their education systems. In addition, state funding formulas guarantee that schools within each state receive approximately equal funding.

The Conference of Ministers of Education (KMK) coordinates education efforts on a national level through representation from each of the state ministries. The KMK has developed a set of voluntary standards and guidelines for school forms, a common curriculum, and mutual recognition of school completion qualifications, all of which are implemented by the individual states. As a result, each school form has clearly stated goals and expectations for students, and the teachers' instructional activities, lesson plans, and interactions with students reflect and support these goals and expectations. Although variations are found between states with centralized versus decentralized education systems, the KMK resolutions ensure a high degree of comparability in the academic process and in implementation of standards throughout Germany. The KMK standards for all *Abitur* examinations are perhaps the most obvious example of these state-adopted national standards.

Another mechanism by which education has been standardized in Germany is through the regulation of textbooks. The state ministries of education publish lists of approved textbooks accompanied by regulations for their approval, introduction, and use. Schools within each state must choose their textbooks from these lists. At the *Grundschulen* we visited, grade level teachers indicated that they reviewed and selected textbooks together. In addition, many *Grundschule* and lower secondary-level teachers said that they base their course curriculum on the textbooks, since they know they conform to the state's curriculum guidelines.

With the exception of the *Grundschule*, the traditionally three-tiered German education system is based on the assumption that students have different capabilities that are best handled by segregating students into separate school forms beginning in the fifth grade (seventh grade in Berlin and Brandenberg) and by providing differentiated instruction to these groups of students of similar ability. As a result, each of these school forms (*Hauptschule*, *Realschule*, and *Gymnasium*) gears its standards, curriculum, teaching style, academic demands, and academic goals to the ability, potential, and needs of its students. Teachers and parents believe that if students are tracked to the appropriate school form for their secondary education, and if they apply themselves, they will be able to achieve at the level required by that particular school form. While most parents are very supportive of this highly tracked school system, some believe that students are tracked into the different schools at too early an age and that this puts "late bloomers" at a disadvantage. Parents who do not want to send their children to one of these traditional school forms can, in some states, send them to the comprehensive school (*Gesamtschule*), a school form which includes students of all levels of ability under one roof. However, in 1991–92 only 8 percent of Germany's total student population attended *Gesamtschulen* (MPI 1994).

Grundschule teachers are responsible for making tracking recommendations for their students, and in most cases parents are confident of the ability of teachers to assess children's ability and to recommend a school form which best "fits" each child. They view teachers as professionals who are able to evaluate the academic achievement of each student as well as pertinent personality factors (such as self-confidence and ability to work independently, which are considered particularly important for academic success at the *Gymnasium*). However, in most states the recommendation is only meant to provide guidance, and the final decision as to which school a child will track to rests with the child's parents.

In recent years, parental concerns about the strength of the economy and their children's prospects for future employment have caused an increasing number of parents to go against the teachers' recommendations and enroll their child in one of the higher school forms. Both the *Realschule* and the *Gymnasium* can lead to the *Abitur* and university study (as well as other higher education opportunities), and the *Abitur* is increasingly viewed as more than just an entrance ticket to the university system. Although all of the school forms were seen as providing students with a multitude of career options, students and parents believe that in an increasingly competitive job market the *Abitur* guarantees a greater selection of more highly paid academic and vocational opportunities, and they want to keep the door to these opportunities open. Perhaps partly because of this and partly because the *Gymnasium* was viewed as a rigorous and demanding school form, teachers stated that parents of *Gymnasium* students were interested and involved in their child's progress to a degree not found at the other forms of school. Parents of *Hauptschule* students seldom came to parent-teacher meetings and rarely contacted the teacher on their own initiative. A higher portion of parents of *Realschule* students came to parent-teacher meetings, but the highest percentage of parents attending parent-teacher conferences was always reported by teachers and administrators at *Gymnasien*.

Most schools in Germany offer few activities outside of classroom instruction. They have a relatively short school day and schedule a limited number of after-school activities for their students. Although the length of the school day varies somewhat across the different school forms, most secondary schools begin early in the day (between 8:00 and 8:30 a.m.) and end in the early afternoon (around 1:00 or 1:30 p.m.). *Grundschulen* have a shorter day, with students arriving around 8:30 and going home around 12:00 or 12:30 p.m. Core subjects at the *Grundschule* level include mathematics and German, and both continue as core course requirements throughout a student's education. Science is introduced at the *Grundschule* level as a part of a broader course, which also includes social studies. At the secondary level, all students must take chemistry, biology, physics, and mathematics; only the depth of presentation will vary according to school form. These courses are considered central to any student's education and necessary to prepare a student with life skills.

Students' lives at school revolve around academic activities, with few opportunities for social interaction. Homework is required by teachers at all school forms, although the amount of homework a student is expected to do depends to a large extent upon the school form they attend. In general, the more rigorous the school form, the more students are asked to do outside of school. *Gymnasium* students said that they spent approximately 2 hours a day on homework and were often required to study new material on their own. *Hauptschule* students said that they usually devoted less than an hour per day to homework and that the homework consisted entirely of worksheets reviewing material already presented in class. Most students said that they did not pursue supplementary instruction outside of school. However, *Gymnasium* and *Realschule* students occasionally hired tutors for particular subjects with which they have difficulty. The use of tutors was most frequent among *Gymnasium* students, who often hired upper-level *Gymnasium* students to tutor them.

For those students who do not attend *Gymnasium*, the system requires academic and vocational choices to be made in the early adolescent years. However, it also works to prepare the students for a profession. Teachers said that the motivation to achieve at school was strongest during the last few years of secondary school when students begin to explore career options. In fact, most teachers pointed to the connection between academic achievement and vocational opportunities as the driving force behind students' motivation for academic success at the *Hauptschule*, as well as for *Realschule* students who do not transfer to a *Gymnasium* to pursue the *Abitur*. In the case of *Gymnasium* students, who attend secondary school 2 to 3 years longer than *Hauptschule* or *Realschule* students, the last 2 years of school are focused on advanced-level courses and preparation for the *Abitur* examinations. Career decisions are delayed into late adolescence for *Gymnasium* students, although the majority of *Gymnasium* students take the *Abitur* to qualify for study at a university or professional level school.

Students have many interests outside of school, and peer relationships may develop from school affiliation or as a result of time spent engaging in sports or other neighborhood-based activities. Students said that in addition to "hanging out" with friends, playing sports at community clubs, going to a cafe, bar, or discotheque, they often spent time at

home listening to music in their room or watching TV with their family. Alcohol and tobacco use was common among many young people. Recreational drug use, although far less common, was also found among some segments of the adolescent population, particularly older adolescents who frequent discotheques and follow the techno-music scene. Teachers and students reported that violence with weapons is almost unheard of within schools, but fistfights did occur at some of the secondary schools.

Only a small percentage of German students work part time while they are enrolled in the *Gymnasium*, *Realschule*, or *Hauptschule*. However, of the 60 to 70 percent of school-age adolescents who complete the *Hauptschule* or the *Realschule* following the 9th or 10th grade, most choose to continue their education in the *Berufsschule*. Through the *Berufsschule* they are introduced to the world of work, as its vocational programs combine part-time work with related studies. These organized apprenticeship programs generally last 2 to 3 years, during which time students receive compensation for their work.

To standardize apprenticeship programs, the federal government has developed and regularly updates training regulations for nearly 400 recognized trade and professional programs offered through vocational/technical training schools. In addition, achievement standards are enforced. Students must successfully complete their program and an exit examination before receiving a certificate. Most importantly however, the dual system of education and training is built on a successful partnership between schools, employers, trade unions, and state and federal governments. This partnership guarantees that students receive quality-controlled training that is relevant to a particular trade or profession and that the certificate they earn will be recognized throughout Germany.

Teachers' lives and working conditions also play an important part in the dynamics of any education system. As with other aspects of the German education system, a standardized structure contributes to the uniformity of teacher training requirements and teachers' workdays and to the overall uniformity of the education process across schools and states in Germany.

The KMK has established the minimum number of major subject, education, and educational psychology courses which university students must take in order to complete teacher training. After university graduation, student teachers take the First State Examination. This exam consists of the following: a written thesis in one of the student's two major subject areas or in general education; a written and oral examination in all of the student's major subjects, including general education; in some cases, a practical exam which may consist of performance evaluations for students concentrating in art, music, physical education, or in technical fields. After successfully passing the First State Examination, students spend 2 years working as a student teacher at an assigned school. Following this, they take the Second State Examination. Upon successful completion of the Second State Examination, they are eligible to apply for their first full-time teaching position.

Principals have the right to observe and evaluate a teacher's performance, but there is a great deal of variability in the frequency of performance evaluations. The results of evaluations are commonly used when considering teachers for promotions and are always required before the decision on tenure. However, most of the teachers we spoke with indicated that they were seldom observed or evaluated.

Teachers generally teach between 23 and 27 lessons of 45 minutes each per week. This breaks down to an average of approximately five class hours a day. This schedule provides little time for collegial interaction before school and during the two short breaks typically scheduled during the day; however, most teachers did not find this situation problematic. A majority of teachers did not report staying after school to work in their classroom or in the teachers' lounge, although the amount of teacher collaboration on curriculum often depended on the school. *Grundschule* teachers, placed the most emphasis on the need to work together on curriculum and standardization issues. Curriculum and other committee meetings on which teachers participated generally were not considered burdensome. Teachers' lounges, which exist in most of the secondary schools, served as the teachers' resource center. However, all teachers reported doing their class preparation and grading at home following school hours.

The level of social status and respect accorded to German teachers varies with the type and location of the school at which they teach. *Gymnasium* teachers tend to be held in much higher esteem than other types of teachers. *Realschule* and *Gesamtschule* teachers had less status, and *Grundschule* and *Hauptschule* teachers had the lowest status. However, all teachers in Germany tend to be respected as trained professionals, and, except for the teachers in the former East German states, all teachers are civil servants. As civil servants, they enjoy job security and the same benefits as other government employees. In fact, many teachers said that job security was an important factor in their decision to become a teacher. In addition, teachers are paid comparatively well. Their salaries are established by a formula which is uniformly adhered to across all states, with the exception of the former East German states, where teachers are paid less than those in the former West German states.

Women comprise a large percentage of the *Grundschule* teachers, while men still comprise the largest percentage of teachers at *Gymnasien*. As a result, teachers said that it is also more common to find female principals at the *Grundschule* than at the lower secondary schools or the *Gymnasium*. One notable feature of all of the German school forms is that principals and assistant principals typically have dual roles. Although their teaching hours are reduced, principals and assistant principals are still active teachers.

Recent demographic changes, including an increasing number of foreign students whose first language is not German, have introduced an element of heterogeneity into Germany's schools. In addition, there has been an increase in the number of single parents and in the number of families in which both parents work. Teachers perceived that these factors have contributed to an increase in the number of students experiencing academic difficulties at school. As a result, teachers said that they have increasingly had

to assume a central role in the socialization of students. Teachers noted that his was particularly true at the *Grundschule* and the lower secondary schools. Students who progressed to the *Gymnasium* often had more stable home situations and more parental support.

Germany's traditionally differentiated system of education still predominates in most states. However, German schools have attempted to remain in step with the social and technological changes of the past three decades. Many states have increased the academic options for students at the lower secondary level by instituting a 2-year orientation period known as the *Förderstufe*. The *Förderstufe*, although incorporated into existing school forms such as the *Gesamtschule* or the combined *Hauptschule-Realschule*, allows students to remain untracked, thereby delaying until the end of the sixth grade the decision as to which school form the student should attend at the lower secondary level. While most teachers and parents said that the highest achieving students should go directly to the *Gymnasium* following the fourth grade, they all agreed that the *Förderstufe* was important for "late bloomers" because it gave them the opportunity to eventually track into either the *Gymnasium* or the *Realschule*. The *Gesamtschule* also added flexibility to the education system. At the *Gesamtschule* major subjects are offered at several levels of difficulty, and students are assigned to the appropriate level based on their ability in each subject.

The majority of respondents spoke well of their country's highly tracked system of schooling. The consensus view was that the different school forms provide learning opportunities for children of varying degrees of intelligence, ability and aspirations. One *Hauptschule* parent made an effort to explain the logic of the German education system in the following way:

Not everyone can become a computer expert or a university professor. Not everyone is born to assume these types of positions, but every child should have the possibility to realize his or her potential, to live his or her own life.

Despite the overall satisfaction with the structure and function of the education system, a number of concerns and criticisms were voiced. Teachers, students, and parents were primarily critical of the effects of budget cuts in recent years, because they have reduced instructional hours and restricted the hiring of new teachers. Some were also critical of perceived differences in the quality of education between states and the increasing number of students enrolling in *Gymnasien* against their teacher's recommendation.

In sum, the German education system is directly influenced by a set of principles which come from social, cultural, and political realms in Germany. While the federal system in Germany protects the sovereignty of the states, it also provides guidance to the states through a federal commission formed of representatives of each of the states. This cooperation has led to a large degree of standardization in the structure of the education system, the development and implementation of similar curriculum standards among the states, and the development of teacher training and certification standards which are accepted across Germany. Secondly, both federal and state governments provide for a

relatively equal distribution of resources for education across states, school forms, and communities. Thirdly, the German education system attempts to provide a supportive and egalitarian environment for all children at the *Grundschule* level. As children grow and their different levels of ability become apparent, these abilities are assessed and students of different levels of ability are provided with an education appropriate to their level of ability through a system which tracks them into separate school forms. And lastly, despite the tracking of students into separate school forms, all students receive instruction in math and science as an integral part of their curriculum through their final year of schooling.

Chapter 1

Introduction

The 81 million people living in the Federal Republic of Germany reside in an area slightly smaller than the state of Montana. Germany is a country with a strong agricultural base and a highly developed and advanced industrial sector. Although German economic growth has slowed since unification in 1990, Germany remains one of the strongest economic powers in Europe and the world, ranking 11th out of 173 countries on the United Nation's Human Development Index.

While Germany is a relatively homogeneous nation, its constitution guarantees the cultural sovereignty of each state. Each of its 16 states has its own ministry of education and distinctive set of political, religious, and cultural traditions. The responsibility for primary and secondary schooling in Germany rests with state and local authorities. Although the Conference of Ministers of Education (KMK) coordinates educational efforts among the states, the federal role in education is limited mainly to the regulation of education and training assistance, including vocational education, and the promotion of scientific research.

Since the late 1940's, the KMK has issued resolutions on topics ranging from the approval of textbooks and parent-school cooperation to the improvement of math and science instruction in the schools. Germany has developed through the KMK a set of *de facto* national standards and guidelines for school forms, which include agreements on the mutual recognition of school completion qualifications, a common curriculum, and required hours of instruction. These agreements form the basis for a degree of comparability between states in a politically and culturally diverse country and reflects a desire for consensus regarding educational structure, the basic goals of education, course requirements, and requirements for completing school.

Central to any discussion of education is an understanding of the basis of the school curriculum. Issues related to curriculum have been addressed by the KMK, and many have dealt with instruction in science and mathematics in particular. A 1968 resolution presented a detailed justification for "modernizing" math instruction and a set of curricular guidelines encompassing grades 1–13. (Empfehlungen und Richtlinien zur Modernisierung des Mathematikunterrichts an den allgemeinbildenden Schulen 1968) Examples of other resolutions related to math and science include: "Improving Math and Science Instruction at the *Gymnasien* of the Federal Republic of Germany" (1970), "School Experiments as a Means of Improving Science Instruction" (1971), and "Recommendations and Guidelines for Math Instruction in the Elementary School" (1976). Each of these resolutions is the product of education research and a common desire by the states to create a set of voluntary national standards in key subjects.

Rationale for the Study

Our aim in this volume is to provide an overview of several important aspects of German schooling that will complement the data of the Third International Math and Science Study (TIMSS). The TIMSS study administered math and science achievement tests and surveys in many nations around the world. The case studies, from which this volume results, were designed to illuminate the cultural and structural context in which schooling takes place in Germany, Japan, and the United States, and to promote a better understanding of how key policy issues facing U.S. educators are dealt with in these other countries.

The research goal in each of the three countries selected for case study research was to conduct an in-depth study of four policy topics of key interest to U.S. policymakers. These are national standards in education, teachers' preparation and working lives, the role of school in adolescents' lives, and how students' differences in ability are managed by the school system. This qualitative information provides the supplementary contextual information necessary for educators to assess and interpret the quantitative data collected through the TIMSS.

Methodology

In all three countries, an ethnographic case study method was used to investigate the four major topics. An extensive review of the relevant literature served as background for the formulation of the research topics. Topics and questions were generated and refined by educators and social scientists from the University of Michigan's Center for Human Growth and Development, review panels affiliated with the U.S. Department of Education in Washington, DC, education scholars in Germany and Japan, and the field researchers. This approach ensured that the questions studied were relevant to U.S. policymakers and applicable in the German and Japanese context. This common set of questions was investigated in each of the three countries (Germany, Japan, and the United States) involved in the Case Studies Project.

The researchers met for a weeklong training session at the University of Michigan prior to the field visits. Because the design called for unstructured interviews and conversations, the training helped assure that the qualitative data would be collected in a consistent yet thorough manner and with a high degree of validity and objectivity. There were guidelines for a common set of questions for each topic, but the actual interview was designed to be free flowing. Researchers were instructed to probe for additional explanations and elaboration of answers when responses were unclear or seemed incomplete.

To facilitate data analysis and provide cross-culturally comparative reports, the researchers developed mutually agreed upon sets of code words to tag and sort the descriptive data within a qualitative data management computer program. Training was provided on use of the data management program, and researchers were each given a portable computer loaded with this program for use in the field as well as a modem for electronic mail communication with the Center for Human Growth and Development and fellow team members.

The National Center for Education Statistics (NCES), in consultation with the case studies project director and German colleagues, chose three cities as field sites. The main site was chosen to be roughly similar to the main sites in the United States and Japan, according to several characteristics such as size, demographics, economic base, and geographic centrality.

In Germany, the three research sites selected were in three different regions: central, eastern, and southern. These three sites were chosen because they represent regional, socioeconomic, and ethnic diversity, as well as the various educational structures found in Germany. Within each of these sites schools were selected to obtain the full range of school forms that exist at the secondary level as well as at schools of high, middle, and low academic achievement. The primary research site was called Central City. The two secondary sites were called South City and East City. To preserve the anonymity of all sites and persons interviewed, pseudonyms are used throughout the volume.

Although the majority of schools visited were located in urban or suburban areas, a few schools at the primary field site were located in rural settings just outside of the metropolitan area. The number of schools visited at the primary and secondary field sites differed. Schools at the primary field site included elementary, lower secondary, and higher secondary levels, and in accord with the grades tested by TIMSS, attention was focused on the 4th, 8th, and 12th grades. A smaller number of schools were visited at the secondary sites.

In Germany, the inclusion of fourth grade was of special importance for the case studies, because (in most states) it is the last grade of elementary school, and the classrooms still include students of all levels of ability. Students in the 8th and 12th grades attend specialized forms of schooling into which they are tracked according to their level of ability. Therefore, at the middle school level, we visited 8th-grade classrooms in four different types of schools, and at the 12th-grade level we visited both academic and vocational secondary schools.

The field research was primarily gathered by means of interviews and conversations with teachers, administrators, students, and parents, in addition to classroom and general observations. All interviews were conducted in German, and each researcher was responsible for investigating one of the four major research topics. Although the above-mentioned interviews and observations provided the majority of the ethnographic

research data, discussions were also held with school authorities and governmental policy experts at the state and national levels. The researchers also collected documents from schools, career-counseling centers, state ministries of education and affiliated research institutes, companies, and the Conference of Ministers of Education.

Altogether more than 180 interviews were held with parents, teachers, students, school administrators, and counselors. Of these, 41 were with individuals connected to a *Grundschule* (elementary school), 80 were with individuals connected either to a *Hauptschule*, *Realschule*, *Mittelschule*, or *Gesamtschule* (different types of middle schools), 28 were with individuals connected to a *Gymnasium* (college-bound high school), and 35 were with individuals connected with a *Berufsschule* or *Berufliches gymnasium* (vocational high schools). Officials from a state ministry of education and from the KMK were also interviewed to obtain state and federal perspectives on a variety of educational issues.

Researchers also conducted at least a dozen observations at each of the traditional school forms: the *Grundschule*, the *Hauptschule*, the *Realschule* (or combined *Haupt/Realschule*), and the *Gymnasium*. A smaller number of observations were conducted at the *Gesamtschule*, *Berufsschule*, and *Berufliches gymnasium* by each field researcher.

Despite initial reluctance on the part of several schools to participate in the study, we found the principals and teachers at all of the schools we visited to be very open and willing to share their views and experiences with us. The majority of these interviews took place in the schools, although a few were held over coffee in nearby coffee shops. Interviews with students were easy to arrange through the principals or classroom teachers. Most were conducted individually at the school. A few were conducted as group interviews. Parents, both fathers and mothers, were also very willing to meet with us and talk about their views and experiences. Most of these interviews were arranged for us by the school principals and were conducted in the parent's homes.

The interview and observation data were transcribed, translated and entered by each of the researchers into a qualitative data analysis program called HyperQual2. Using HyperQual2, the researchers were able to assign codes (tags) to passages, which referred to certain frequently occurring themes. Although a common set of codes was agreed upon prior to the research, the researchers were also allowed to add to their coding scheme as they felt necessary. This coding system allowed the researchers to analyze and sort the tagged data from each of the interviews and observations by searching and extracting all of the field research findings related to specific themes.

Members of the German research team worked together in Germany for 3 months in the fall of 1994. Although they were able to communicate easily with each other electronically through an e-mail system that also linked them with staff at the University of Michigan, the German research team also met regularly to discuss their findings and assess their progress. Following the field research, copies of each individual's research data were submitted to the University of Michigan for storage and

to facilitate access by other team members as they began the long process of data analysis and report writing. In addition, the researchers returned to the University of Michigan for several days to meet as a group, present preliminary findings, and exchange ideas related to the findings.

The process of analyzing the data and writing the field reports began almost immediately. Once the data were transcribed and translated, tagged and sorted, the individual researchers each spent several months writing their chapters. Draft copies of each chapter were submitted to the project director, Harold Stevenson, for review and comments. The authors then worked to refine their drafts, responding to the comments provided. The resulting chapters, which appear in this volume, are the result of many months of intensive work.

Gaining Entry

Jürgen Baumert, a German professor of education, and Rainer Lehmann, the German national research coordinator for the TIMSS project, assisted the Case Studies project in gaining access to schools. To this end, Baumert and Lehmann submitted applications for research to the appropriate state ministries of. Once the state ministries had approved the application for research, letters were sent to schools selected by our German colleagues asking for their cooperation. The final decision to participate was left up to the individual schools, and in some cases principals sought permission from the teaching faculty before responding to our request. Although this practice led to a delay in the case of one school's participation, the researchers found that all of the principals and teachers were welcoming and cooperative once the decision had been made. Arrangements to interview teachers and students were almost always made through the principals of the schools, and most parent interviews were arranged for us through the principal as well. Although the researchers tried to obtain interviews from a full range of students and parents, we found that those who were interviewed were either average or highly involved parents and students. Observations of math and science classes were often arranged for the researchers on the day of the visit, with principals requesting permission of the teacher as the researcher was being introduced to them. As a result of the spontaneity of these arrangements, researchers were given the opportunity to observe the types of classes, which are typical of these schools, not pre-rehearsed or specially prepared lessons.

Overview of the German Education System

The German education system provides different paths for students based on individual ability. Children enter the *Grundschule* at age 6, and students of all levels of ability remain together as a group through the fourth grade of *Grundschule* (sixth grade in two states). Following *Grundschule*, when most students are around 10 years old, the

German school system tracks students of differing abilities and interests into different school forms. In spite of the far-reaching changes of the past 30 years, including the shift from elite to mass education, Germany's traditional three-tiered system of education at the secondary level remains intact. In addition, support for this system remains strong among teachers, students, and parents of differing educational and social class backgrounds.

Grundschule teachers recommend their students to a particular school based on criteria such as academic achievement, potential, and personality characteristics, such as ability to work independently and self-confidence. However, in most states parents have the final say as to which school their child will track to following the fourth grade, and some parents go against the teacher's recommendation because they believe the higher level tracks offer their children more opportunities.

In most states, students enter one of several school forms at the lower secondary level (which comprise of a pyramid of academic achievement).

- The *Hauptschule* (grades 5–9 in most states) leads to receipt of the *Hauptschule* certificate and then to part-time enrollment in a vocational school combined with apprenticeship training until the age of 18.
- The *Realschule* (grades 5–10 in most states) leads to receipt of the *Realschule* certificate and then to part-time vocational schools, higher vocational schools or continuation of study at a *Gymnasium*.
- The *Gymnasium* (grades 5–13 in most states) leads to the *Abitur* and prepares students for university study or for a dual academic and vocational credential.

Although it is possible for students to switch to a higher-level school form with improved performance, it is not a frequent occurrence. It is more common that a student will move to a less rigorous school if they cannot meet their school's performance standards.

Hauptschule

The lowest-achieving students attend the *Hauptschule*, where they receive slower paced and more basic instruction in the same primary academic subjects taught at the *Realschule* and *Gymnasium*. Additional subjects at the *Hauptschule* have a vocational orientation. In most states, students enroll in the *Hauptschule* beginning in the fifth grade and continue their education at the *Hauptschule* through the ninth grade. However, some states require school attendance through the 10th grade, and in one of the southern states all students who do not enroll in the *Gymnasium* for the 5th grade are sent to the *Hauptschule* for a minimum of 2 years. Enrollment figures reported 25 percent of 14-year-olds attended *Hauptschulen* in the 1992–93 school year (*Statistisches Bundesamt* 1993).

Realschule

The *Realschule* provides students with an education which combines both liberal and practical education from the 5th through the 10th grade, but the emphasis is on liberal education. Enrollment figures for 1992–93 reported by the *Statistisches Bundesamt* (1993) listed 24 percent of 14- year-olds enrolled in *Realschulen*, and an additional 7 percent enrolled in combined *Haupt/Realschulen* (the latter located mostly in the eastern states).

The education focus of the *Realschule* is differentiated between the *Unterstufe* (lower level), which incorporates the 5th, 6th, and 7th grades, and the *Oberstufe* (upper level), which includes the 8th, 9th, and 10th grades. The lower level has a strong pedagogical emphasis, while the upper level is more closely oriented to various disciplines. The combined *Hauptschule* and *Realschule*, which exists in some of the former East German states, is called a *Mittelschule*.

Gymnasium

The *Gymnasium* provides students with a liberal education and traditionally leads to study at the university. According to statistics reported by the Statistisches Bundesamt (1993), 30 percent of 14-year-olds at schools in Germany in the 1992–93 academic year were enrolled in *Gymnasien*.

Students may enroll in the *Gymnasium* at the lower secondary level (5th grade) or may transfer to the *Gymnasium* after the completion of the *Realschule* (11th grade). In some states, it is also common for students to transfer to the *Gymnasium* following the sixth grade. The final 3 years of *Gymnasium* (grades 11–13 in most states) are called the *Oberstufe* (upper level).

The three most common education tracks offered by standard *Gymnasien* are classical language, modern language, and mathematics-natural science. A variation of the traditional *Gymnasium* is the *Berufliches gymnasium*, which offers specialized orientations in areas such as economics or the technological sciences in addition to core academic courses. Students who successfully complete study at a *Gymnasium* (or *Berufliches gymnasium*) and pass the comprehensive examinations receive the *Abitur*.

Gesamtschule

These schools, otherwise known as comprehensive schools, are not found in all states. The *Gesamtschule* arose out of a social movement in the 1960's that promoted the idea of more egalitarian access to education for everyone, and it is the school form most like public schools in the United States. Most *Gesamtschulen* are located in states that have been governed by the Social Democratic Party.

Gesamtschulen enroll students of all ability levels in the 5th through the 10th grades. Students who satisfactorily complete the *Gesamtschule* through the 9th grade receive the *Hauptschule* certificate, while those who satisfactorily complete schooling through the 10th grade receive the *Realschule* certificate. Enrollment statistics from the Statistisches Bundesamt (1993) reported 9 percent of Germany's 14-year-olds attended integrated *Gesamtschule* in 1992–93, although enrollment in the *Gesamtschule* was nonexistent in states which do not provide this school form, in other states enrollments varied from 15 and 35 percent.

Berufsschule

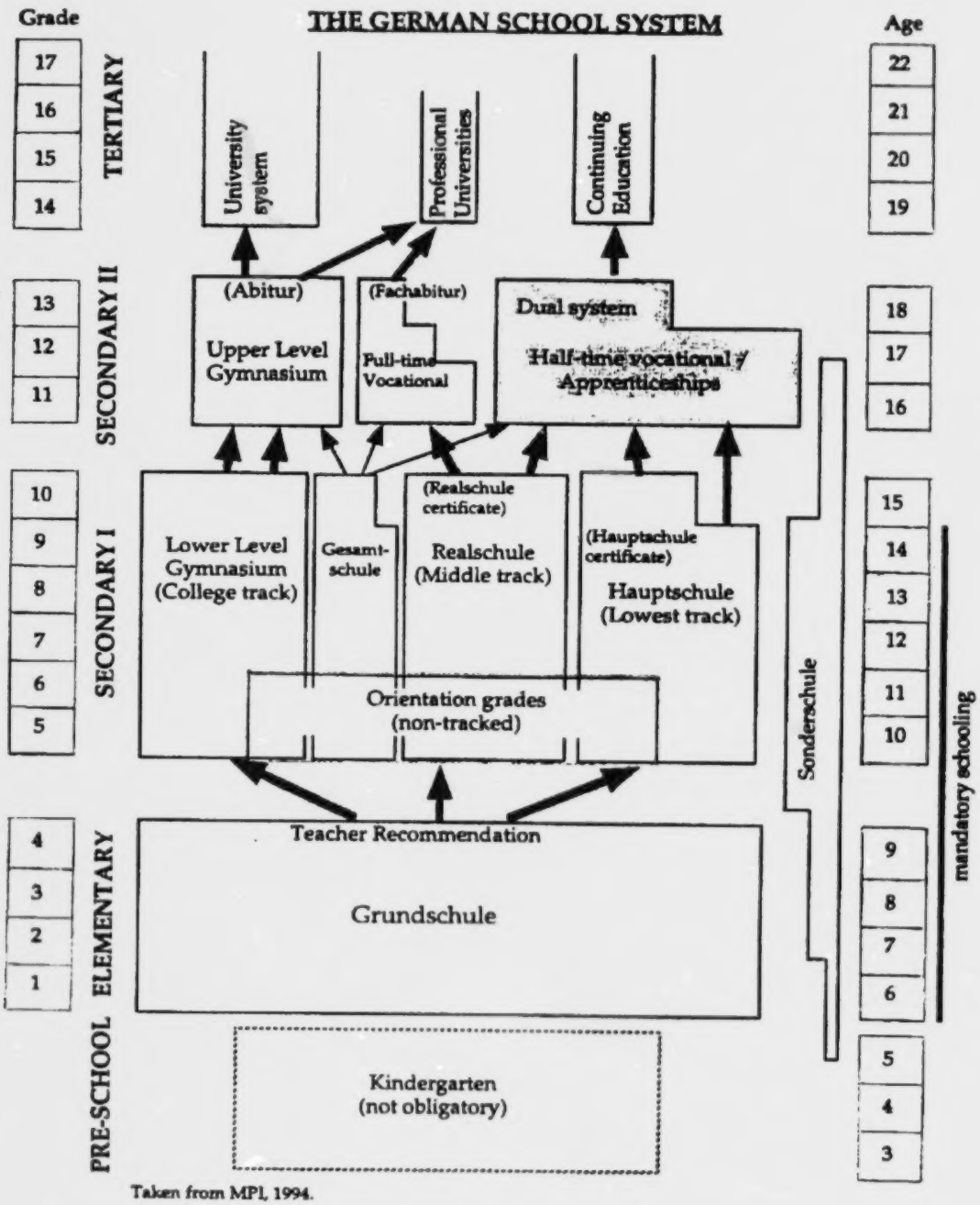
The *Berufsschule* is an upper secondary school form which students may enter to pursue part-time academic study combined with apprenticeship, following the successful completion of either the *Hauptschule* or *Realschule*. The successful completion of an apprenticeship program leads to certification in a particular trade or field of work. Unlike the general education (K–13) schools listed above, which are under the direct control of local and regional authorities, the responsibility for Germany's dual system, which combines education with vocational apprenticeships, is shared by the Conference of Ministers of Education, a national coordinating and advisory body, the federal government, the states, representatives from industry, commerce, the trades and trade unions, and vocational teachers.

Figure 1 provides a basic illustration of the German education system.

Regional Differences

It is important to note that there are regional differences in the education system in Germany. Each state's school structure has been influenced to some extent by different historical and political events. The Christian Democrats, who have held power predominantly in the southern states, strongly identify with the traditional school forms and the fostering of the academic elite, while the Social Democrats have encouraged school reform as a means of increasing equality of educational opportunity. As a result, many aspects of schooling in the states of central and northern Germany differ from those in the southern German states, despite the fact that all states have basically the same education structure and core curriculum, abide by the uniform examination requirements for completing upper secondary schooling (*Abitur*), and recognize school completion credentials from around the country.

Figure 1—The German school system



Taken from MPI, 1994.

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Funding K–13 Education

The German financial constitution (*Finanzverfassung*) requires tax redistribution between the states, meaning that states with higher tax revenue per capita share their revenue with economically weaker states. Because of this redistribution of funds, schools throughout Germany are at least on approximately equal standing in terms of spending on education, although differences do still exist. Most noticeable are the differences, which continue to exist between the states of former East Germany and those of former West Germany. The redistribution of funds does not yet apply to the new states of former East Germany, which operate with fewer resources. The economy remains weaker in those states and the financial support, which they have received from the old states has not brought them up to parity with the former West German states.

Throughout Germany, funding for K–13 education derives primarily from state and district funding sources; the federal government's share of the total school budget is relatively small—11 million DM of a total of 52.7 billion DM in 1990 (BMBW 1993).

The largest percentage of the K–13 school budget goes to personnel costs for teaching staff and teachers with administrative positions. Most personnel costs are paid from state resources rather than by the district. State allocations for personnel are based on attendance numbers at each school. Principals tally up these numbers and convert them into classes, which are then assigned periods of instruction per week by grade level. The total number of periods per week (teacher hours) is submitted to the district offices, which approve or deny request for additional teacher hours. Principals also submit the number of teacher hours represented by the teaching staff presently stationed at the school, indicating how many additional teacher hours are needed, if any. The state then assigns teachers to each school according to the number of instructional hours approved to meet the school's instructional needs.

Personnel costs for the 1993–94 school year averaged 72 percent of the total school budget in all of Germany, and in the case study states the percentage ranged from 62 percent and 69 percent in South State and Central State, respectively, to 92 percent in East State (*Statistisches Bundesamt* 1995).

District funds are primarily used for school upkeep and nonteaching staff, i.e., secretaries, groundskeepers, and janitors (MPI 1994). In 1993–94, approximately 30 percent of school funding in Germany came from the district level. Both South State and Central State were inline with the average, receiving approximately 33 percent of their school budget from the district. Statistics regarding local funding in East State are unclear (*Statistisches Bundesamt* 1995).

As a result of the redistribution of funds between states and the reliance on state level funding for schools' instructional needs, there is a fairly even distribution of financial resources between schools in former West Germany. This is reflected in the per pupil spending figures, which include budget expenditures comprised of both state and district

funds. In 1993–94, per pupil spending in all of Germany averaged 9,283.40 DM ($4,485). The average per pupil spending in South State was 10,094.01 DM ($4,876), in Central State 9,909.66 DM ($4,787), and in East State 7,787.61 DM ($3,762) (*Statistisches Bundesamt* 1995).

The Research Sites

The researchers each spent 2 to 3 months collecting data at the primary research site. In addition, three of the researchers spent between 2 and 4 weeks conducting research at each of the two secondary sites in order to collect data with which to put the findings from the primary site in perspective. Since our field research was limited to schools in 3 states, we do not claim to represent the views of individuals from all of Germany's 16 states.

The primary site, Central City, is located in one of the states that forms the geographic center of Germany. It is a modern city of over a half million people. The city and its suburbs compose one of the country's leading trade and finance centers and contains an ethnically diverse population. In 1991, the average unemployment rate in this area was more than 1 percentage point below the national average. Both the city and the state in which it is located can be characterized as urban, nonindustrial, administrative, prosperous, ethnically and socially heterogeneous, and politically progressive. As a result of its politically progressive history, the primary site contains a broader range of schooling arrangements than those found in some of the other German states. The city itself supports over 80 elementary and basic secondary schools (*Grund-* and *Hauptschulen*), 15 secondary schools (*Realschulen*), over 20 academic secondary schools (*Gymnasien*), and over a half-dozen comprehensive schools (*Gesamtschulen*). In addition, a small number of schools lying in more rural areas outside of Central City were included in our school sample in this region.

The secondary site located in eastern Germany is an industrial city of about the same size as the primary site. East City offered an opportunity to contrast the steady economic, education, and cultural characteristics of central Germany with those of a rapidly changing city within the former East Germany. East City is also a regional center for higher education and culture. Although the economy has suffered during the transition from a socialist to a capitalist system, it remains one of the most promising centers of industry and trade in eastern Germany. Politically, the state favors the conservative Christian Democratic Union (CDU) but has a notable progressive element. The city and the state may be characterized as urban, heavy-industrial, prosperous by eastern German standards, heterogeneous, and politically conservative.

The other secondary site is a medium-sized city of slightly over 100,000 people located in one of Germany's southern states. South City and the state of which it is a part are both rural and industrial, prosperous, and moderately heterogeneous. The city is smaller than the other two sites we visited and is a regional center for administration, education

and culture within a state which is socially and politically more conservative than is the case in either of the other two research sites. The region is widely known for its rigorous standards and "stay-with-the-basics" approach to schooling, and the conservative political climate is reflected in the traditional structure of the education system and the relatively small number of students who attend *Gymnasium*. The city's school system includes approximately 20 elementary and basic secondary schools (*Hauptschulen*), a half dozen *Realschulen*, and 8 *Gymnasien*.

The Schools

In Central City we visited three *Grundschulen*, two combined *Haupt/Realschulen*, two standard *Gymnasien*, one *Gesamtschule* (comprehensive school), two *Berufsschulen* (part-time vocational schools), and one *Berufliches gymnasium* (vocational high school). These schools were spread around a very large area and were in very different neighborhoods, some in highly urban areas, others in outlying suburbs or former villages turned suburbs, and still others in the rural area just outside the main city. The schools at the primary site were selected to represent the diversity in the area, in terms of socioeconomic factors, ethnicity, and academic rigor. A few included 50–60 percent foreign and immigrant students, while in other schools foreign students comprised less than 25 percent of the student enrollment.

The first *Grundschule* in Central City was located in a prosperous suburb, which has recently seen an influx of urban professionals. The suburb, though now connected to the city by train, was once a rural village. It is surrounded by lush vegetation and can be characterized as conservative and middle class. The school is relatively small with around 200 students. The administrative building and newer modern classroom buildings surrounded a courtyard, which hummed with the activity of children before school and during recess. This *Grundschule*, referred to as Maple Village Elementary by Mark Ashwill in his chapter on standards, has always been well known for its high standards, and still routinely sent over half its fourth-graders to a *Gymnasium*.

The second *Grundschule* was located in an economically depressed part of Central City. Although the *Grundschule* was of average size, it shared a building with a *Hauptschule* and *Realschule*, making the overall student population of the combined schools quite large. The school itself was in fairly good condition, but the neighborhood was a mixture of old and new apartment buildings, small businesses, ethnic restaurants, markets, and bars. Despite the problems associated with being in a low-income neighborhood, the school was known for its engaged and caring teaching staff and its competent administrative leadership. Foreign students at this school made up more than 60 percent of all enrolled students. This *Grundschule*, referred to as Oakwood Elementary by Mark Ashwill in his chapter on standards, recommends approximately 20 percent of its students to *Gymnasium*; the remaining 80 percent go to either a *Hauptschule*, *Realschule*, or *Gesamtschule* following their 4th year at *Grundschule*.

The third *Grundschule* is located in the southern part of the study site on the outskirts of a small town approximately a half hour drive from Central City. The school was smaller than the other two elementary schools, enrolling only 130 students. It was very colorful both inside and out, and it was viewed as innovative in its teaching practices and scheduling. Many of the children from this *Grundschule* went on to study at a reputable nearby *Gesamtschule*.

The *Gesamtschule* that we visited was in a town of approximately 15,000 people, located about an hour's drive from Central City. Most of the children in the area attend this *Gesamtschule*, which also offers upper level *Gymnasium* courses (*Oberstufe* grades 11–13) leading to the *Abitur*. It was one of the first four *Gesamtschulen* in the entire state. It currently has an enrollment of nearly 1,000 students. The building itself is relatively new and well equipped. Unlike many schools we visited, the halls displayed a wide range of student activities, including art projects. The school brochure also listed a large number of elective courses available to students during their sixth period. These included English clubs, soccer, computer, other language clubs, a math club, and a music club.

The two-combined *Haupt/Realschulen* were located on opposite sides of the city. One was in a former village turned suburb on the outskirts of Central City and the other was in a low-income urban area. The suburban village *Haupt/Realschule* was housed in an older building, but the school and the entire neighborhood were well kept. The village was originally home to many individuals who worked for a large industrial company nearby and still retains its middle-class atmosphere. The school atmosphere was friendly and relaxed, yet productive. The urban combined *Haupt/Realschule* was a large school, which also included a *Grundschule*. Nearly 800 students attend this combined school. The school bulletin states that in 1993–94, about 150 of these students were enrolled in the *Hauptschule* track and 26 percent of all students came from families on social welfare. The building itself is made of modern concrete and is in a lower socioeconomic section of the city, where many immigrant families and lower income working-class German families live. Approximately 70 percent of the student population is comprised of non-German students.

We visited two *Gymnasien* in Central City—one in the city and the other in a picturesque rural town to the south of the main city. Both schools had long histories and solid reputations among the academic secondary schools in their state. Both also had strong math and science programs. The *Gymnasium* located in Central City drew students from the entire metropolitan area, with many traveling to school by train each day. The second *Gymnasium*, located in a smaller community about an hour's drive from the city, drew its students from the surrounding rural communities. Both schools were relatively large, with even the rural school enrolling approximately 900 students in grades 5–13.

We also visited a *berufliches* (vocational) *Gymnasium* which shared a building with a *Berufsschule (*vocational school). The *Berufliches gymnasium* was known to be less rigorous than the standard *Gymnasium*. This school was located in a middle-class neighborhood in a small city about 30 miles outside of Central City. The *Berufliches*

gymnasium and *Berufsschule* combined enrolled nearly 1,800 students. The *Berufsschule* offered programs combining education with apprenticeship for students holding completion certificates from either a *Hauptschule* or *Realschule*. Because it enrolled students from a large area and because the *Berufsschule* students also worked at internships, many of the students drove to school. The school, built in the 1980's, was large and well equipped with the latest computers and computer software for its students. A total of 110 teachers taught courses at this school, some in both programs.

We visited a smaller number of schools at the two secondary sites. Their inclusion in the study allowed us to gather information regarding some of the variation between the education systems and school types in the three states. In East City we visited a *Grundschule*, a *Mittelschule*, a *Gymnasium*, and a *Berufsschule*. In South City we visited a *Realschule* and a *Gymnasium*.

The *Grundschule* in East City was located in a densely populated area of the city and was surrounded by concrete apartment buildings. Current enrollment was approximately 340 students, and its 19-member teaching faculty was younger than average. The building itself, while also concrete and rather drab, contained large well-lit classrooms and had a friendly, open atmosphere.

The *Mittelschule* in East City was located in a residential suburb of the main city approximately 40 minutes from the center of town. The school contained grades 5–10 and enrolled approximately 300 students. There were 24 teachers on the staff. The school, while old, was in good condition and had up-to-date computer facilities.

The *Gymnasium* in East City was very large with over 1,200 students and a teaching staff of nearly 75. It was located in a area of the city containing approximately 100,000 people; most of whom lived in concrete apartment buildings. As was the case in Central City, the *Gymnasium* drew students from other regions of the city as well as those who lived nearby.

The *Berufsschule* in East City specialized in vocations related to metalwork. Although the school enrolled over 1,000 students in programs, which lasted for 2–3 years, the staff included only 29 teachers. Most of the teachers had heavier-than-normal teaching loads.

In South City, the *Realschule* was housed in a very traditional, almost palatial-looking building in the old part of the city. The inside of the building, however, was rather bare and functional in appearance, with very little student artwork decorating the halls or rooms. As is typical of most schools in Germany, the school was built around a central courtyard and students used this courtyard to gather with friends before school and during breaks. Approximately 450 students were enrolled at this *Realschule* and there was a teaching staff of 34.

The *Gymnasium* in South City was slightly larger than the *Realschule* we visited there. There were slightly more than 500 students and 51 teachers. The building itself was relatively new, although the school has a long history. It is located in a residential area outside of the old city.

To assess the achievement levels in math and science of the students in the lower secondary schools who participated in this case study, our German colleagues contacted each of these schools and asked them to allow testing of one eighth-grade classroom. All of the case study schools participated except for the *Realschule* located in Southern State. In the schools, which offered both *Hauptschule* and *Realschule* tracks, the test was administered to an eighth-grade classroom from each track.

The test consisted of a subset of math and science problems that comprised one of the test booklets administered to students who participated in the Third International Math and Science Study (TIMSS). Therefore, the test data from this subset allowed a comparison of scores achieved on this set of questions at case study schools with those achieved by eighth-grade classes in other German schools.

Test results show that the lower secondary schools all fall well within the average range when their test results are compared to others of the same school form. So, for example, the results from all three *Hauptschule* track classes at the case study schools show that the class scored at or near the mean score for all *Hauptschule* classes that were tested as a part of the TIMSS study. This was also true of the eighth-grade *Realschule* track classes that were tested.

These test results also confirmed the rather substantial differences between academic achievement levels at the various school forms. The mean math score for *Hauptschule* students was 18 points lower than that of *Realschule* students, and the mean science score for *Hauptschule* students was 16 points lower than that of *Realschule* students. One *Gymnasium* in Central City also participated in the subset test at the eighth-grade level. Although this *Gymnasium* was considered by state education officials to be an average Central City *Gymnasium*, its students outscored the local case study *Realschule* students by an average of nearly 25 points in math and seventeen points in science.

The other *Gymnasium* in Central State, which participated in the case study, did not participate in the TIMSS subset test. However, we were able to obtain from education specialists in Germany an indication of its academic achievement level. The *Gymnasium* located within Central City was rated as being within the top third of *Gymnasien* in Central State, and the *Gymnasium* located in a smaller community just outside Central City was rated as average. The *Gymnasium* in East State did participate in the TIMSS subset test. To assess its achievement level, its mean scores were compared to those of all the *Gymnasien*, which took the TIMSS test in Germany. Its test results in both the 8th and 12th grades demonstrate their achievement level as average.

Grundschulen which participated in the case study were administered the TIMSS subset test at the fourth grade. The results cannot be compared to a national sample for fourth-graders, since the TIMSS was not administered at the fourth-grade level in Germany. However, we can compare the case study schools to each other. The four case study *Grundschulen* from Central State all scored within 8 points of each other, well within the standard deviation of each, while the *Grundschule* in Leipzig scored approximately 20 points above those in Central State. From these scores, and our observations and interview information, we can conclude that the case study *Grundschulen* in Central State were average schools while the *Grundschulen* in Leipzig was above average in achievement level in math and science.

Outline of This Volume

Interviews and observations conducted at the 16 schools in Germany provide the core of the data used in this volume. The chapters are arranged by topic, with each author focusing on the data to construct a broad yet detailed picture of their research findings. Furthermore, each author attempted to situate the findings for their particular research topic within the larger cultural context.

We seek in the following chapters to describe in detail the results of our field research according to the four research topics chosen for this study. In order to clearly represent the findings from the field research, the topical chapters of this volume offer both summary descriptions of data as well as direct quotations from parents, teachers, and students from each type of school. Therefore, the reader will encounter information pertaining to the major school forms, the *Grundschule*, *Hauptschule*, *Realschule*, *Gesamtschule*, *Gymnasium*, *Berufsschule*, and vocational *Gymnasium* as it relates to each of the major issues. While this may give the appearance of redundancy at times, this approach will familiarize readers with the differences and similarities shared by these school forms.

Chapter 2 reports the findings related to the topic of education standards. Field research on education standards focused primarily on the following topics: the development and application of standards, particularly in math and science, in each of the school forms; curriculum development and implementation of curricula as a reflection of these standards; examinations as a means of evaluating the degree to which students meet these standards; and the transition from one school form to another and to postsecondary education. Also investigated were the role of textbooks, homework, grading, instructional hours, examinations, and training. The comparability of schooling among states was also examined. *Abitur* examinations in mathematics and the sciences (appendix A) were translated to provide supplemental data for the analysis of standards.

Chapter 3 deals with the topic of individual differences in ability, especially the cultural and personal perceptions of individual differences in academic performance. Among areas considered are, how the education system and individuals within the system deal

with individual differences, attitudes toward the way in which the education system accommodated individual differences, and people's attitudes toward the education of disabled or gifted students.

The role of school in adolescents' lives is examined in chapter 4. The primary issues were: time use at school and in other activities, attitude towards school and education, the transition from secondary school to employment or higher education, and the influence of external factors such as family, peers, and society on adolescent development and academic achievement.

Chapter 5 reports on the findings related to the topic of teachers' working conditions and training. Interviews were organized around four major topics: teachers' personal characteristics, the training and professional development of teachers, the profession of teaching, and teachers' working conditions.

Chapter 6 provides a brief summary of research findings derived from the discussions of each of the four research topics.

Chapter 2

The Development and Implementation of Education Standards in Germany

By: Mark A. Ashwill

Introduction

The Federal Republic of Germany has 16 states, each with its own ministry of education and distinctive set of political, religious, and cultural traditions. While Germany is a small and relatively homogeneous nation, its constitution guarantees the cultural sovereignty of each state. In contrast to the high degree of centralization that exists in some other industrialized countries, the responsibility for primary and secondary schooling in Germany rests with the state and district authorities. The federal role in education is limited mainly to the regulation of educational and training assistance, including vocational education, and the promotion of scientific research.

Standards and the Conference of Ministers of Education

How do national standards signal to students, families, employers, and education authorities the degree of mastery expected of all students? For what grades are standards devised? Who or what agencies devise these standards? How precisely stated and explicit are the standards? How frequently are the standards changed? To begin to answer these questions in a German context, we need to examine the manner in which general recommendations and resolutions agreed upon at a national level are translated into policies and practices at a state level.

Most of the discussion about education standards in Germany has taken place not in the corridors of the federal government but in the plenary sessions of an organization called the Conference of Ministers of Education (KMK). The KMK is an advisory body, which attempts to ensure national comparability through joint agreements. In the absence of a centralized national ministry of education in Germany, the KMK performs a national coordinating function for standards in education.

Founded in 1948, the KMK was created in direct response to the Nazi policy of *Gleichschaltung*, which was an attempt to rid the country of regional differences in education and other cultural areas (Eckstein & Noah 1993). The KMK was charged with overseeing the cultural policy of all states within a framework of cultural sovereignty guaranteed by the German constitution. The KMK provides a forum in which the individual states coordinate the structures, institutions, curricula, and school-leaving certificates of their primary, secondary, and higher education systems. The result is that Germany has developed a set of *de facto* national standards and guidelines that form the basis for a degree of comparability between states. The KMK resolutions become legally binding when they are promulgated in the form of state laws, decrees, and regulations.

Over the years, the KMK has addressed a number of important issues related to math and science instruction. A 1968 resolution presented a detailed justification for "modernizing" math instruction and a set of curricular guidelines encompassing grades 1–13 (Empfehlungen und Richtlinien zur Modernisierung des Mathematikunterrichts an den allgemeinbildenden Schulen 1968). The resolution represented an attempt to standardize math instruction by recommending specific learning objectives and suggesting a teaching methodology based on the work being carried out in other Organisation for Economic Co-operation and Development (OECD) countries. In spite of its age, the thematic outline for the fourth grade, for example, is remarkably similar to the framework curriculum currently being used in several states.

Examples of other resolutions related to math and science include "Improving Math and Science Instruction in the *Gymnasien* of the Federal Republic of Germany" (1970), "School Experiments As a Means of Improving Science Instruction" (1971), and "Recommendations and Guidelines for Math Instruction in the Elementary School" (1976). Each of these resolutions is the product of education research and a common desire to create a set of voluntary national standards in key subjects.

Regional Differences in Education Across Germany

While all German states have basically the same education structure and core curriculum, abide by the uniform examination requirements for the *Abitur* (the school-leaving exam that follows attendance at a *Gymnasium*), and recognize school-completion credentials from around the country, there are differences in actual practice. For example, many aspects of schooling in the states of central and northern Germany differ markedly from those in the southern German states. Regional differences can also be detected in the states of the former East Germany. As in the rest of Germany, the education structures and priorities of these states reflect the political constellation of each state's government. Accordingly, Brandenburg, which is governed by the Social

Democrats (SPD), has promoted the *Gesamtschule* (comprehensive school), while Saxony, Saxony-Anhalt, and Thüringen, where Christian Democrats are the majority party, have introduced middle schools (called *Sekundarschulen* or *Mittelschulen*) that combine *Realschulen* and *Hauptschulen* (Mitter & Weiss 1993).

These differences emerge as a result of state legislation and are implemented through the individual state's Ministry of Education. It is the Ministry of Education that devises the curricula guidelines and communicates them to the districts and the schools.

As we will see throughout this volume, an examination of the development and implementation of education standards in 3 of Germany's 16 states illustrates in dramatic fashion the challenge of establishing comparability in a nation that values regional cultural sovereignty over national uniformity. While this section has briefly outlined how recommendations and resolutions approved by the Conference of Ministers of Education (KMK) filter down to the state level to become laws, rules and regulations, and curricular guidelines, we now turn to the development and implementation of the curriculum. How closely must teachers follow the officially prescribed curricular guidelines? How are students evaluated and promoted from one grade to the next? What do teachers, principals, students, and parents think about the curriculum and the issue of standards? These topics will be examined within the context of the elementary school, the lower secondary schools, the *Gymnasium*, and the vocational schools.

Methodology

We conducted field research on education standards in German schools over a period of 3 months. The research consisted of interviews and conversations held with teachers, administrators, students, and parents, as well as observations in classrooms, elsewhere on school premises, and in everyday settings. All interviews were conducted in German, tape recorded, and later transcribed and translated into English for storage and analysis.

I conducted all of the interviews on the topic of standards at the primary site, as well as the observations pertaining to this topic, except for a few interviews at a vocational high school that were conducted by a German research assistant. I also joined Ute Milotich in collecting interview and observation data at the schools in East City, while William Foraker collected the interview and observation data relevant to the topic of standards during his visits to the schools in South City. William Foraker shared data from the secondary sites with me, and these were included in the analysis and reflected in this chapter.

On this topic, my colleagues and I conducted a total of 13 interviews at academic high schools, 17 at vocational high schools, 35 at middle schools, and 14 at elementary schools. Of the total number of interviews pertaining to this topic, approximately seven were held in East City and eight in South City. In addition, approximately 35 classroom

and general observations were included in the data analysis. Printed information obtained from schools, career-counseling centers, state ministries of education and their affiliated research institutes, and the Conference of Ministers of Education was also integrated into research findings in this chapter.

Elementary Schools

Elementary education represents both the easiest, most relaxed school time that children experience in Germany and a time when school performance is decisive in influencing future school paths. Two main concerns confront education policymakers: maintaining curricular standards in the *Grundschule* (elementary school) while at the same time providing an equal foundation in education for each child.

Curriculum Development and Implementation

All curricular, or "framework" guidelines (*Rahmenrichtlinien*) for the *Grundschule* in Central State are developed by an institute affiliated with the state Ministry of Education called the Institute for Educational Planning and School Development. The curricular guidelines, which are binding, distinguish between units, learning objectives, content, and instructional periods. They provide a uniform basis for instruction within the *Grundschule*. However, teachers are permitted to revise and supplement the content outlined in the curricular guidelines to suit their particular school.

In South State, detailed curricula are issued for the *Grundschule*. A typical overview of a particular subject would indicate topics to be covered and the estimated periods of instruction per topic, followed by a list of learning objectives and content preceded by a short description of what should be achieved. Also included would be suggestions of the types of activities, including homework, and the forms of assessment teachers should use to accomplish the stated objectives. South State also employs a system of accountability to ascertain the extent to which teachers are achieving the goals set by the official curricula.

Teachers we spoke with indicated that the manner in which the state's curricular guidelines are put into practice differs from school to school, often depending upon the social, economic, and cultural background of each school's students. Teachers base their lesson plans on the official curricular guidelines (e.g., grammatical elements to be covered, number of essays to be written, and mathematical concepts to be presented). However, it is left up to the individual teacher to determine along with colleagues the topics to which they will devote the most time in class.

Since textbooks in Germany must meet curriculum guidelines provided by the state's Ministry, teachers said these textbooks could be seen, at least in theory, as a reflection of the curriculum guidelines. Therefore, teachers can refer to the appropriate chapters of the text in order to develop their lesson plans. One teacher estimated that 70 percent of

her instruction in most subjects is based on textbooks, with a somewhat higher percentage than this in math. The remaining materials consist of photocopied handouts or materials, which she purchased herself from publishing companies that design materials appropriate for children. These materials encourage independent work and provide answer keys so that children can correct their own work. Although out-of-pocket costs can range from $75 to $150 per year, according to one veteran teacher, schools are unable to reimburse teachers because of budgetary constraints.

One reason teachers said that they use supplementary materials is to allow students to proceed at their own pace. Moreover, teachers said that some textbooks were not well suited for children, and other books, such as the German text, portray a society that no longer exists. One *Grundschule* teacher said:

> Page 18 of a given book presents the same problems for all children. One student can finish the work in 10 minutes, another needs a half-hour to complete the work. The good student is not sufficiently challenged and is bored. But you can't have him work on page 19, because the material has yet to be discussed and agreed upon by the teachers. As a result, you need supplemental materials, which you have to obtain on your own. You have to differentiate. If not, then the good students become bored and there are disruptions and disturbances. The bad students—or rather those who learn more slowly—always have the feeling that they're not keeping up.

Teachers at a school with a large percentage of foreign students also stated that they simplify and modify the content to suit the needs and interests of their students.

Mathematics. As determined by Ministry guidelines, *Grundschulen* devote the most instructional periods, five per week, to math and German. (Introduction to the sciences, *Sachkunde*, ranks second with 4 weekly periods.)

Fourth-grade math in Central State typically covers these concepts and skills:

Working with numbers up to 1,000—review
Working with numbers to 1 million
Addition and subtraction
Measurements and word problems
Multiplication and division by tens
Multiplication with one-digit numbers
Geometric shapes
Division with one-digit numbers
Multiplication with two- and three-digit numbers
Number qualities and relationships
Planes
Division with two-digit numbers

An analysis of a unit plan based on the curriculum for fourth-grade mathematics in East State revealed many similarities to the fourth-grade curriculum of Central State in terms of sequence and content. The curriculum proposed by the Ministry in East State was divided into four areas: arithmetic, measurement, word problems, and geometry. Each area contained a brief description of what students are expected to know, as well as a listing of specific concepts and skills in one column and sample exercises and problems in the other.

Teacher criticisms of curricular guidelines. There were several criticisms which *Grundschule* teachers expressed concerning curricular guidelines:

1. *Unrealistic expectations.* Teachers complained that they have too little control over the development of the curriculum and that those in charge of developing curriculum may have once been teachers themselves, but they are now out of touch with schools. They also said that teachers and students are required to cover too much material, while too little attention is paid to what children are capable of learning and achieving. The criticism that the guidelines are too comprehensive and unrealistic was expressed more frequently at *Grundschulen* with a large percentage of foreign students. The principal at one such school summed it up by saying that his teachers are not able to "cover the same amount of material" at the same rate as the schools with more homogeneous student populations in which all students have a good command of German. A teacher from a *Grundschule* with this kind of demographic mix complained bitterly that

   > Money spent on panels of experts would be better spent on the physical plant of the school, as well as on reducing class size to 15 students by hiring more teachers, especially at schools such as ours. Then we could do what we were taught to do at the university; that is, to strengthen the weaker students and stimulate the high achievers.
   >
   > Referring to a class of 22 students in which 15 have behavioral problems and 6 are emotionally disturbed, she asked rhetorically "what good are curricular guidelines from a Ministry of Education bureaucracy which has long since lost touch with the day-to-day reality of schools?" Her suggestions for improving the Ministry's curricular guidelines included incorporating children's interests into the curriculum and providing more specific and concrete guidance as to how a particular unit should be presented.

2. *Influence of political change.* Periodic political realignments influence curriculum development and other aspects of the education system. Central State offers a salient example of the impact of political change on education; while the curricular stability in neighboring South State reflects its lack of political volatility. One teacher compared the impact of new governments on education policy and practice to a "gigantic ocean liner that's sailing at full steam and suddenly has to stop. The ship will continue to move forward for quite awhile before it comes to a complete halt. Every political party wants to do the best job possible. That's putting it nicely."

The new curricular guidelines became effective in the 1995–96 academic year. According to one ministry official, the main difference between the old and the new guidelines is that the new guideline plans specify what should be achieved in a school year, whereas the old guidelines outlined the maximum and were therefore considered to be overly ambitious. In addition, the new guidelines emphasize interdisciplinary instruction, whereby the teacher identifies a central theme that forms the basis for instruction in reading, writing, arithmetic, science, and field trips. The goal is to ensure a stronger connection to reality and unite learning with the real world and the children's experiences. A teacher of 30 years experience remained skeptical, however, about successfully implementing any new curriculum because of the average age of the teaching staff in Central State (i.e., 49 years old), many of whom are nearing retirement. She said:

> They are not going to be terribly interested in reworking everything. They have developed a certain style, have tried out new things, and want to stick with what they know works, and wonder how to combine the new with what they've been doing for many years.

Textbooks

The various Ministries of Education and Cultural Affairs regularly publish lists of school textbooks approved in their states. In addition, the Ministries publish the regulations for the approval of texts, information on the introduction and use of textbooks, and information on the criteria employed by examiners appointed by the ministry. Since the states' Ministries monitor and approve textbooks for use in schools, the locus of control remains at the state level and the role of the KMK is minimal. However, KMK resolutions for textbook usage stipulate that textbooks may be approved if they are consistent with federal laws and the constitution and meet the prevailing content, didactic and methodological demands of the respective state Ministry of Education.

Textbook publishers indicate in their brochures the states in which each textbook is approved. Schools are then able to choose from a list of textbooks approved by their state Ministry.

In the *Grundschule* we visited in Central State, the teachers of a particular grade selected their textbooks through a process of unanimous decisionmaking. If teachers disagreed on the selection of a textbook, they then considered others. The entire process of textbook approval could last from several months to half a year, and teachers said that because of recent budget reductions and the rising costs, textbooks must now be used for longer periods of time once they are adopted. All school materials, including textbooks, are provided to students free of charge.

Homework

In Central State, the state Ministry of Education guarantees by law the right of each student to play and relaxation and limits the amount of homework that can be assigned. The type and difficulty of the homework are to be adjusted to the achievement level of the students, their age, and any extenuating circumstances, such as lack of parental support. It is expected that assignments be made in such a way that students can complete them in a reasonable period of time without outside help. Students in grades one and two should spend no more than 30 minutes a day on their homework, while children in the third and fourth grade can spend up to 45 minutes. Homework may also not be assigned over the weekend. Teachers reviewed homework each day in class and periodically checked the students' notebooks.

Most teachers said that they assign homework every day as a means of reviewing what has been covered in class. In grades three and four, homework is also assigned in preparation for the next topic in the curriculum. More generally, homework is also viewed as preparation for higher levels of schooling, especially with mainly native speakers of German, where over half of all children go on to the most difficult school form, the *Gymnasium*, following their 4th year at the *Grundschule*. This view reflects the wishes of many parents. Both parents and teachers view homework as a means of instilling a sense of responsibility in children and believe that it helps students to become better organized and develop good work habits that will serve them well in school and in life. In the upper grades of *Grundschule*, homework is also seen as a way of covering material that can no longer be reviewed in school because of large class size. (The prescribed limit for elementary school classes in Central State is 25 students.) One teacher said that she checks her students' homework "to show that she is interested and that they have not done the work for nothing."

Guidelines from the Ministry of Education in Central State suggest that the *Grundschule* set up a homework assistance service which permits German and foreign children to work on their homework together (Regelungen, p. 46). *Grundschulen*, where most children can count on their parents' help with academic problems, offers homework supervision in a nearby public building for children having difficulties with their homework or overall schoolwork. This service, which is coordinated by volunteer mothers and offered two afternoons a week for a total of four periods, is utilized mainly by low-achieving foreign children who are having problems with the German language. For some, especially those from large families, it represents a quiet place to study and to hang out until one of their parents comes home from work. Teachers and parents pointed out that relatively few German children take advantage of this service. A fourth-grade teacher at a school with many foreign students oversees a similar program for all fourth-graders who require additional help. The group meets for 1 hour 2 days a week.

Grading and Examinations

As with homework, textbooks, and curricular guidelines, the state Ministry of Education clearly spells out grading, examinations, and promotion policies. In Central State, the Ministry's guidelines state:

> [The elementary school is] one pedagogical unit in which the students gradually become accustomed to written exams and the ways and methods of taking these exams. Special attention should be given to assisting each student. The grades should be discussed with the students in individual, group, or class conversations. These discussions should focus not only on the weaknesses but should above all serve to motivate the student (Regelungen, p. 179).

The number and length of the exams, which are set by Ministry directives for each grade, are consistently translated into practice at a school-based level. In addition, teachers in Central State indicated that they are required to inform students at the beginning of the school year about the method of grading for oral and written performance, and parents must be officially notified one week before the required exams are to be administered.

Grundschule teachers are not permitted to give any written exams in the first and second grade, and schools issue only one report card at the end of the year for first- and second-grade students. The report card contains information about each student's work habits, special skills and weaknesses, behavior, commitment to learning, and extent of class participation. It does not include letter grades. In addition, teachers are only permitted to make positive comments on a child's report card. The rationale behind this provision is that evaluation is viewed not only as a form of feedback but also of encouragement and motivation. In order to evaluate students' achievement, first-grade teachers may give only practice exams, which last no more than 15 minutes. These often take the form of short dictations in German and quizzes in arithmetic.

In voicing support for these limitations, one teacher likened the process of taking a test to that of enduring the rigors of athletic competition:

> In the first half, they do well, in the second half, they make a lot of mistakes. They know the material, but cannot work intensively for any great length of time. They lack the conditioning. It's like sports. When a runner trains for the 100 meter dash, he can't handle the 200 meter race. It's really the conditioning, but in an intellectual and mental sense.

A number of parents and teachers, however, expressed concern over the policy of nongrading during the first 2 years of school. They noted that the attempt to ensure a stress-free experience for the children and a gradual initiation into the school

environment could make the adjustment to third and fourth grades all the more difficult for some students. In addition, this "double-edged sword" could lead parents to believe that their children are doing reasonably well until they receive a "poor" or failing grade in the third or fourth grade.

The grading scale used throughout the German education system ranges from 1-6. (A "6" is the equivalent of a failing grade.) Teachers are permitted to add a plus or minus in parentheses to provide further differentiation.

1 = very good (Performance exceeds course requirements.)
2 = good (Performance fully meets course requirements.)
3 = satisfactory (Performance generally meets course requirements.)
4 = adequate (Performance generally meets course requirements but shows deficiencies.)
5 = poor (Performance does not meet course requirements but indicates that the necessary basic knowledge exists and that the deficiencies can be remedied in a short period of time.)
6 = very poor (Performance does not meet the requirements and indicates that even the basic knowledge is so fragmentary that the deficiencies can not be overcome in the foreseeable future.)

One criticism of the grading system among teachers we spoke to was that it is too general and imprecise. A teacher from a school with mainly German natives suggested that elementary schools adopt the same point system of 1-15 used in the upper level of the *Gymnasium* (grades 11-13 in most of Germany), because it allows teachers to make finer distinctions and differentiate more precisely among students. In the case of a "3," teachers would have the flexibility of assigning a 7, 8, or 9.

Report cards are standardized throughout Central State and in the other states. For third- and fourth-graders, report cards are divided into two categories, one for behavior and work habits and the other for the academic subjects. There is also a section for comments.

Exams prescribed by the Ministry for *Grundschule* are limited to the two primary subjects: German and mathematics. In Central State, the guidelines prescribe:

2nd grade:	4 tests in German, each no more than 15 minutes long 4 tests in Math, each no more than 15 minutes;
3rd grade:	6 exams in German, 3 no more than 30 minutes and 3 no more than 15 minutes 6 exams in Math, 3 no more than 30 minutes and 3 no more than 15 minutes;

4th grade: 6 exams each in German and math for a total of 12, 4 in each subject no more than 30 minutes long and 2 for an entire class period (45 minutes).

Other optional forms of assessment include quizzes and worksheets designed to determine the extent to which students have mastered the subject matter. Teachers said that a student's course grade is a combination of examination results and classroom participation. One school indicated that they had developed a formula, which allocates 40 percent for written work and 60 percent for quizzes and classroom participation.

The following is a typical fourth-grade math examination:

1.

3,485	1,826	8,411	9,119
+4,795	+4,327	−1,727	−6,703

2.

2,387	9,010	10,000
+4,254	−986	−4,705
+2,963	−4,714	−1,934

3. Subtract 3385 from 6134.

4. 8 * 660 = 5 * 435 =

5. 1,350 divided by 3 = 4,600 divided by 5 =

6. Round off the following numbers to

10s	100s	1,000s
4,927	6,004	9,997

7. Yesterday, 4,025 cars were counted on a particular road. Today, 1,989 fewer cars were counted. How many cars were counted today?

8. Draw a triangle with the following dimensions: lines AB and AC have a length of 6 cm and line BC has a length of 8 cm.

9. There were 2,486 people at the circus of whom 985 were adults.

   How many children were at the show?
   a. Calculate with rounded numbers.
   b. Calculate the exact answer.

10. What part of 2,500 is 5?

    What is one-fifth of 30?

As with the other secondary subjects, there is only one written exam per semester for introductory science (*Sachkunde*). At the schools in Central State, third- or fourth-grade students are also examined in the so-called practical subjects: all students must pass an externally administered examination in bicycle safety and first aid. Other subjects, which appear on the report card in addition to German, math, and introductory science, are handwriting, music, physical education, art, and arts and crafts.

Teachers noted that it is in the third grade that children tend to encounter their first negative experiences in school, since the teachers must now ensure that the "weaker" children meet the standards of the class. Also, in the third and fourth grades, exams serve to confirm for parents whether their children have mastered the material. Students must take in-class examinations home for parents to sign, as proof that they have seen them and are informed about their child's academic progress.

Unlike teachers at the lower secondary schools, *Grundschule* teachers exhibited a high degree of cooperation with their colleagues in creating examinations and establishing grading criteria. Teachers noted that exam content was often agreed upon with the other teachers in advance to ensure that they all demanded a comparable level of achievement. Exams were typically based on material, which was covered in the preceding month.

Unlike students in some of the other *Grundschulen* we visited, teachers at a *Grundschule* with a high percentage of foreign students informed us that most of the exam preparation for their fourth-grade classes took place in class. Teachers did this so as not to give some students an advantage over their classmates whose parents did not or could not help them at home. One teacher at this school said that the best students in her class usually completed the exam in 15 minutes and work on other material until everyone is finished.

Retention and promotion. It is impossible to hold back a student during the first 2 years of *Grundschule*, unless a student's parents request this because their child has suffered from a long-term illness. Third- and fourth-grade students can be held back if they receive a grade of "poor" in two of the three primary subjects—German, math, and introductory science—or if a student receives a grade of poor (5) or very poor (6) in two of the three major subjects. Students who are held back twice are evaluated to determine if they should be transferred to a special education school.

As in other states, the rate of failure in the *Grundschule* in Central State is minimal. Even children who do not meet the minimum standards are frequently promoted to the next grade. Teachers with whom we spoke noted that the decision to promote a student may be based on social as well as pedagogical considerations. One teacher justified promoting a foreign child whose work was not "up to par" because he had received no support at home from parents who do not speak German. In reference to such children, she said that they were "not going to become university professors anyway. As long as they can get a job and earn a decent wage. . . ."

Use of Computers

We found that the teachers did not use computers in their classrooms regardless of the demographic composition of the school. Although some of the teachers were aware of studies that suggest that elementary students could benefit from the use of computers, the prevailing sentiment was that they are inappropriate and unnecessary for children in grades one through four. Teachers said that they believed that students should learn the basics in reading, writing, and arithmetic before they begin to work with a technology that they do not understand. They also said that the school provided sufficient opportunities for practice without the use of technology.

Teachers also noted that another reason not to introduce computers in the elementary school is that they discourage cooperative work and communication among children, precisely the skills which the elementary school should be promoting. As one teacher put it,

> This does not mean that we are antitechnology. It is not as if they are missing out on something. We have videotapes, slide projectors, overhead projectors, records, cassette recorders, and televisions. It is not as if we reject technology.

In discussions with teachers, it was apparent that their familiarity with and affinity towards computers tended to be a product of age; the younger teachers were more familiar and comfortable with the use of computer technology than their older colleagues.

Elementary School Teachers' Views of Student Preparation

The KMK recognizes the wide variability in learning readiness among children entering *Grundschule*. This is exemplified by its description of teaching language skills in its "Recommendations for Work in the Elementary Schools" (May 6, 1994). "The knowledge and abilities of first-graders in reading and writing vary widely. The elementary school must open the door to elementary written culture." (p. 17).

Parents and teachers said that insufficient preparation for school and lack of social skills were among the most common problems contributing to poor academic performance and asocial behavior among students in *Grundschulen*. These problems were often attributed to home environments that lacked stability, discipline, and nurturing.

Two of the *Grundschule* we visited in Central State provided a vivid contrast in terms of their surroundings and their academic achievement levels: Maple Village Elementary is a small suburban school in an upper-middle-class neighborhood. Teachers at Maple Village said that the majority of parents here provided their children with academic assistance, attended school functions, and were generally able to provide many stimulating out-of-

school activities for their children. Over half of the students from Maple Village matriculated to *Gymnasien* in recent years. By contrast, Oakwood Elementary is a large school located in an economically depressed urban setting. Oakwood's student population is largely made up of children of foreign workers. Many of the children's parents do not speak German and the students cannot count on their parents for academic assistance. In addition, teachers said many are from families where both parents work outside of the home, and the children are often left alone in the afternoons at the end of the school day. Only a small percentage of students from Oakwood Elementary school matriculate to a *Gymnasium*. Most continue their lower secondary education at either the local *Hauptschule* or *Realschule*.

A teacher at Maple Village had this to say about teaching and curriculum implementation in schools with more heterogeneous student populations:

> If you have the misfortune of being at a school with 90 percent foreigners, you can't compare the work of those teachers with that of Maple Village. Of course, people would say that the school with a high percentage of foreign children has a lower quality of instruction. How to change this is an issue for the politicians to decide. All of the teachers are equally well prepared. They all come from the same two or three local universities. They all have to take the same exams to become a teacher. They all work with the same curricula and lesson plans. It's just that conditions differ from school to school.

Many teachers we spoke with said that they believed that social and economic forces have given rise to homes with two working parents, single mothers, and divorce. As a result, parents have less time to spend with their children. This prompted one Maple Village teacher to refer to equality of opportunity in education as an illusion. One teacher described her view in this way:

> One gets the impression that they don't get enough of love and attention at home and have to get it from their teacher at school. There are children who want to have the teacher all to themselves. They're very good at inventing questions or saying things just to attract the teacher's attention.

Another perceived cause of substandard achievement and disruptive behavior is the widespread availability and use of technology as a substitute for human interaction. Teachers said that children expect them to entertain, not teach, and that students were unable to deal with a particular issue or subject in any detail. Several teachers told us stories of parents who gave their children tape cassettes with stories instead of reading aloud. After a rainy weekend, teachers said they know exactly which TV programs the students watched without parental supervision by observing them at play during Monday recess. The amount of time children spent in front of the television and playing computer games was also blamed for underdeveloped small motor, speaking, and writing skills, and the inability to concentrate for any length of time or to behave properly in a group setting.

A veteran teacher at Maple Village recalled a class of 50 students she taught 30 years ago in which there was harmony, quiet, concentration, and a work ethic among her students. While she still discerned a work ethic among the children of today, she thinks they are "burdened by a steady stream of information and stimuli to the extent that they have to shut out that which they are unable to deal with." A colleague echoed her sentiment:

> Twenty-five years ago, I could work with children for 45 minutes and with the same level of achievement from all. Now, you have to constantly change your approach or think of some way to restore their concentration.

While acknowledging these problems and symptoms, the teachers at Oakwood Elementary also pointed to the pressure of growing up in single-parent families, the effects of domestic violence on children's emotional development, the impact of non-German speaking parents on a child's schoolwork, and the occasional conflicts of a multicultural classroom. Without exception, teachers we spoke with strongly believed that the *Grundschule* were increasingly asked to meet economic, emotional, and intellectual needs not being met elsewhere.

Oakwood Elementary is known as a *Brennpunktschule* (literally a "flashpoint" school, meaning one with a substantial "at-risk" student population) because of its location in a low-income neighborhood and the problems associated with poverty and neglect. Oakwood teachers said they must frequently address extracurricular concerns before meaningful learning can take place. One teacher spent the beginning of each day with her students assembled in a "breakfast circle" to talk about yesterday's events and resolve conflicts which had arisen either at home or in school. The more dedicated teachers made an effort to keep the lines of communication open with parents by periodically talking with them on the telephone, scheduling appointments in school, or visiting the students' homes.

How teachers learn to deal with these added burdens is often a result of experience rather than formal education. One of the younger teachers told us that she was totally unprepared for the harsh reality of teaching in this type of school. She blamed her lack of preparation on the antiauthoritarian orientation and overly theoretical emphasis of her university training. She and colleagues of her generation were not taught to discipline children and those who did were considered to be "bad" teachers.

> Like all young people, children try to test limits and if you don't set any, they will take advantage of the situation. Then you have discipline problems, the class becomes loud, many of the children can no longer hear what you're saying, and you are unable to teach.

She explained that she had allowed herself to become aggressive in the sense of setting limits, which does not mean screaming at children but rather not allowing children to hit or laugh at their classmates.

These views were shared by elementary school teachers in East City, where these problems are compounded by the lingering effects of economic dislocation and political change. The high unemployment rate in former East Germany and the lack of job security has taken its toll on some parents and their children.

Teacher and Parent Expectations

Although *Grundschule* teachers take their role as educators seriously, what they expect from their students and what they emphasize in the classroom may vary, depending upon the school's student population.

Teachers at Maple Village stressed the link between the *Grundschule* and secondary education, knowing that the majority of their students will attend the *Gymnasium* after fourth grade. One teacher pointed to the relationship between the *Grundschule* and upper level schools, saying that if she lowered her standards, it would have implications for both the lower secondary schools and the students. "The teachers will not be able to teach properly and the students will end up having a piece of paper [a diploma] that is basically worthless," she explained. Another teacher expressed a similar sentiment:

> You should teach children that achievement can be something good, that one has to work hard to achieve his goals in contrast to the view that 'everything's easy, you'll get it sooner or later, someone will do it for you.'

Teachers at Oakwood emphasized the importance of a high quality education as a determinant of future success in general or in vocational education and the world of work, and they were likely to speak of the need to create a positive and relaxed classroom atmosphere, one which encourages children to identify with their school, feel at ease, and feel free to participate. Teachers at Oakwood also said that they tried to emphasize the value of good work habits and a commitment to excellence. In addition, they stated that the role of teachers is not only to transmit knowledge but also to compensate for what is lacking at home.

Parents agreed with teachers' descriptions of the role of school in students' lives. In particular, parents agreed that the *Grundschule's* role was to prepare children for a smooth transition to a lower secondary school. Parents also said that they saw the *Grundschule* as a place where children learn to interact with others.

Parental Involvement In the Administration of Schools

Parents are entitled to participate formally in the life of the school and have input on administrative and academic decisions. A KMK resolution from 1980, updated in 1991 to reflect the changes brought about by unification, details the myriad forms of school-parent cooperation as they exist in the different states.

In Central State, there are parent councils for each class, grade, school, school district, and the entire state, all of which play an advisory role. The school council, which the conservative Christian Democrats have promised to abolish if they return to power, is a consultative body of teachers, parents, and students. Its purview ranges from the organization of school life and teaching to the sponsorship of events outside school but under school supervision. The school council also concerns itself with general education and teaching issues, such as the suitability of textbooks, schoolwork and homework requirements, and grading criteria, as well as measures related to the physical plant of the school. Most of the parents we spoke with were unsure of what types of decisions they were empowered to make. One Maple Village mother said that too many parents like to interfere in the work of teachers and that too many decisions are placed at the feet of parents that should really be made by teachers and administrators. For example, parents are not especially well equipped to decide whether English should be offered or what textbooks will best fit the curriculum.

Classroom Observation (Oakwood)

The following observation of a fourth-grade class was similar to others observed in terms of seating arrangement, activities, number of recesses, degree of cooperation and mutual support among students, and the emphasis on problem solving.

This class of 20 students was seated at 4 tables situated throughout the room, which was equipped in a spartan manner. While the walls had been freshly painted by parent volunteers and teachers, the desks and chairs were in poor condition. The class was comprised of a culturally diverse group of children from Austria, Croatia, India, Italy, Morocco, Turkey, Vietnam, and other countries. This reflects the larger student population at Oakwood, where native German children make up only 30–40 percent of the students.

The first activity in the lesson plan was introductory science (*Sachkunde*) and a review of bicycle safety rules. The homework assignment, prepared on a handwritten mimeographed handout, was to identify each traffic signal by matching a number, indicating directions, with each type of light (in Germany: red, yellow, red to yellow, green) and answering several questions. The children were preparing for an examination required of all fourth-graders to be administered by two local police officers.

After a brief recess, the next subject was math, which began with an oral exercise involving numerical sequences such as _____, 15,000, 15,001; 99,999, _____, 100,001, and so forth. The teacher then instructed the children to work on exercises taken from the textbook, which involved adding or subtracting a constant from various five-digit numbers.

(+60)	(-80)	(+7)
30,690	40,920	89,910
40,900	50,000	54,949
45,970	60,200	70,095
89,590	79,010	80,999
63,450	92,640	21,396

The problems were then discussed as a class. Whenever a student had the wrong answer, the other students indicated their disagreement by knocking on their desks. The teacher asked those students who had the highest percentage of correct answers to explain the process they used to arrive at the correct answer. This was the first time that the class had done subtraction with large numbers. Since the teacher noticed numerous mistakes involving subtraction, she instructed the class to work on additional problems (e.g., 60,000–9, 40,000–9, 10,000–9, and 80,000–9).

After yet another 15-minute recess, the children opened their German textbook. The teacher asked for volunteers to recite by memory one of two poems, which they had selected about fog. The children applauded after each reading. The class then moved to the front of the room to be closer to the chalkboard, where the teacher revealed a story she had written on the board entitled "Two Friends." Together, they examined the text in a step-by-step manner by reading it aloud and explaining the words using a pointer. The teacher posed scan-type questions (when, where, who, and what) and asked students to point out nouns, underline references to time, and make a list of words from the same word family. The homework assignment was to finish writing out the dictation.

In this class of mostly foreign and immigrant students, the teacher had forged a cohesive group of learners who were, with few exceptions, focused, well disciplined, and motivated. One had the impression that learning was not limited to inputs and outcomes; rather, it was an adventure and an ongoing process in which the teacher served as the facilitator.

The Transition to Lower Secondary Education

> You must imagine it this way: the school is like a vase. A liter of water fits into the vase; then, if there is too much water, it overflows. There are three vases: *Gymnasium*, *Realschule*, and *Hauptschule*. And the water fills up the *Gymnasium* first, then the *Realschule*, then the *Hauptschule*. (*Realschule* teacher, South City)

The KMK describes the mission of each school form as follows: The *Hauptschule* provides a basic general education that prepares students in accordance with their ability and interests in vocational education. The *Realschule* offers an expanded general education, which allows students to continue their studies at the upper secondary level. The *Gymnasium* provides an in depth general education leading to postsecondary education.

The KMK also specifies that the structure of the lower secondary schools, which comprise grades 5–10, is based on general education, the fostering of individual talents, and the promotion of the intellectual, spiritual, and physical development of all students. Efforts are made to encourage traits such as independence, decisionmaking ability, and personal, social and political responsibility. Other goals include ensuring that instruction is appropriate to the level of understanding of each student in form, content, and degree of difficulty and providing a gradually increasing emphasis on specialization linked to the abilities and interests of the students. Finally, the schools also seek to ensure sufficient permeability to allow students to change school forms after the orientation phase.

Parental involvement in their children's education is probably at its zenith during the transition from the fourth to the fifth grade, because in Germany this transition represents one of the most pivotal steps in a child's life in regard to education. For most children, the choice of school in which they will enroll following the fourth grade is the most reliable predictor of their academic and professional future. How is this decision made and by whom? What are the criteria for attending a *Hauptschule*, a *Realschule*, or a *Gymnasium*?

In most states, the type of lower secondary school which children attend is determined by a student's academic achievement in the *Grundschule*, their teacher's view of their academic potential, and by parental support.

In Central State and South State, decisions about promotion are based on the teacher's recommendation and a specified grade point average. The student's teacher provides a written recommendation based on academic achievement, and the final decision is made by the student's parents. In practice, how this decision is made differs somewhat from state to state.

In South State fourth-graders with a grade point average of 2.3 or better in German, English, and math have the right to enroll in the *Gymnasium* in the fifth grade or the *Realschule* in the seventh grade. If their previous academic performance does not meet this criteria, they can take an admissions exam, which is developed and administered by each receiving school. Children with passing scores have the right to attend this school. Sixty percent of all children in South State attend the *Realschule* and the *Gymnasium*, approximately half of these to each of the two school types. Two-thirds enter the *Realschule* on the basis of grades and one-third from the results of an admissions test. Under the current system in South State, all children who do not enroll in the *Gymnasium* in grades five and six enroll in the *Hauptschule*. However, there are plans to modify the system to permit qualified students to enroll directly in the *Realschule* in the fifth grade.

In southwestern Germany there is yet a slightly different procedure for determining which lower secondary school form a child should attend. In this state, fourth-grade students take centrally created exams in German and math. The exam results and school grades form the basis for the decision about promotion. In 1992–93, 90 percent of all

parents in southwestern Germany accepted the official placement recommendation. Parents who disagree must consult with the school, and their children must take a battery of comprehensive exams. If there is still disagreement, the students are required to take an entrance exam to gain admission into the school of choice.

In Central State, there are no set criteria for admission to a *Realschule*; the judgment of whether a child is suited for the *Gymnasium* is based on several factors, including a student's grade average (generally 1s and 2s), the likelihood of parental support, and good study and work habits and behavior. Unlike other states, which may require a student to have a grade point average of 2.5 or better to enter the *Gymnasium*, the prescribed grade average in Central State has been established by general consensus and is not a Ministry directive. In cases where there is disagreement between the teacher and parents, the wishes of the parents take precedence. During a conversation with one mother, her fourth-grade son, who overheard her say it was the parent's decision, informed her in no uncertain terms that his teachers had explained to his class that the final decision was theirs.

In Central State, the school which parents choose is legally obligated to admit their child, unless the principal can prove that there is insufficient space. School administrators, however, have devised ways to subvert the primacy of parental rights. Years ago, borderline children could attend a *Gymnasium* for one week, be evaluated in all subjects, and be either recommended for admission or rejected. Currently, a *Gymnasium* principal might receive a list of 20 names from a feeder elementary school. After the first 12 names is a blank line. It is understood that the remaining eight names are "questionable" students. Conversely, in order to maintain enrollments, which determine the number of teachers and other resources, principals may resort to admitting students who are likely to fail.

The transition to the *Gymnasium* can be difficult for children who have not learned how to work independently and in an organized and efficient manner. Based on their experience, both *Gymnasium* and *Grundschule* teachers agreed that a grade average of less than a 2 will most likely result in failure and eventual transfer to a less demanding and prestigious school form. For example, a *Gesamtschule* student explained how his fourth-grade teacher told him that his best option would be the *Gesamtschule,* because he might be held back at one of the more "demanding" school forms.

Since some parents either do not want their children to be left behind or view the *Gymnasium* as the only route to success and security, they insist that their child attend the *Gymnasium*, regardless of his or her past academic performance or potential. Other parents make the decision on a case-by-case basis, weighing each child's chances for academic success and personal fulfillment. As one Maple Village mother whose older son was attending a *Gymnasium* informed us,

> We would not send him (the younger son) to a *Gymnasium* if he were only average; that spoils the fun for the children. That's what these different options are for: the *Realschule* or, if we're uncertain, a *Gesamtschule*. Then we can reconsider at the end of the sixth grade whether or not to transfer him to a more demanding school.

There was a perception among many teachers and students we spoke with that a growing number of *Gymnasium* students belong in school types (i.e., *Realschule* or *Gesamtschule*) more in line with their academic ability and skills. Indeed, in recent years, nearly 30 percent of all students attending the *Realschule* or *Gymnasium* in Central State did so against their teacher's advice. One-third of these children switched schools after one semester (Baumert 1994).

According to one *Realschule* teacher from South City,

> The question of where the parents send their children has a lot to do with the social value placed on the various school forms. Parents naturally try to have their children attend the highest status school type and pursue the highest possible career opportunities. Consequently, the universities are overcrowded. The craftsman says, for example, 'my son should have it better,' so he goes to the *Gymnasium*. The more people who push their way into the *Gymnasium*, the lower the performance potential of the students will be. The *Gymnasium* must make an effort to maintain its standards and the value of its credential. With such a rush of children to the *Gymnasium*, it is difficult to turn so many kids away. As a consequence, the standards of the *Gymnasium* must decline. You know the saying, among the blind the one-eyed is king. That is, the *Gymnasium* produces many *Abitur* graduates who are not particularly well qualified.

Another teacher also suggested that many students are pushed into a *Gymnasium* despite the fact that they might be more successful in another school form. He estimated that one-third of all *Gymnasium* students are having academic problems and belong in a *Realschule* and that many fifth-grade *Gymnasium* students need tutoring in two to three subjects.

Many parents and teachers said that the level of school-related stress a student experiences depends on how well suited they are to the demands of the type of school in which they are placed. One teacher described a boy who would regularly bring in cookies and candy to "awaken the love" of the teacher and earn the recognition of his classmates. This led the teacher to wonder about the legal right of the parents to make the school placement decision, and whether there should instead be an entrance exam for fourth-grade students.

Förderstufe. Most states offer an orientation level for "late bloomers" who require additional time for adjustment and growth. This orientation level, know as the *Förderstufe*, is generally incorporated into either the *Gesamtschule*, the *Realschule*, or a combined *Haupt/Realchule*, and is limited to grades five and six. In 1992–93, 21 percent of all fifth-graders in Germany attended the nontracked *Förderstufe*.

The purpose of the *Förderstufe* is to allow for additional assessment by delaying the final decision about placement until the end of the sixth grade. The primary objective in grades five and six is to ease the transition from primary to secondary school, which is achieved by promoting each student's readiness and ability to learn, attempting to provide an orientation to the student's own interests, attitudes and ability, and compensating for differences in social background (Mitter 1987). The consensus among most teachers and parents at all levels is that children who have excelled in elementary school should bypass the orientation level in grades five and six and proceed directly to the *Gymnasium*, where they will benefit from a higher quality education.

In Central State, the *Förderstufe* has been an ideological battleground for the two major political parties. During a previous liberal SPD administration, the *Förderstufe* was mandatory for most students. After the conservative CDU came to power, it became optional. The end result was that the best students transferred to a *Gymnasium* and the remaining students were either those who were not qualified or prepared to enter the *Gymnasium* immediately after the fourth grade, or those students whose parents possibly wanted their children to attend the orientation level for political reasons.

The Ministry of Education in Central State has actively promoted the orientation level by providing such items as instructional materials and suggestions in the form of curriculum guidelines. The curriculum emphasizes project work, meaning that students are supposed to learn in an interdisciplinary manner. For example, a topic such as "the family" is dealt with in the context of a number of subjects and taught in 6-week modules. This approach requires teachers to spend an inordinate amount of time in preparation and meetings, and the level of coordination of these meetings differs from school to school, depending upon the extent of teacher involvement.

In the first semester of the fifth grade in the *Förderstufe*, all students take the same courses. Differentiation begins in the second semester with A, B, and C courses, which have differing levels of difficulty. This system, which also reflects the tripartite structure of Germany's education system, is a means of "selecting out" students. In one instance, a teacher decided that 10 children were suited for A courses and the remaining students for B and C courses. However, the parents of five of the students assigned to a lower level course insisted that their children enroll in the A course. Even though all of these students performed poorly on the first two exams, it was impossible to transfer them to a more appropriate level. Although the teacher provided supplemental instruction for these students, they were forced to switch to a course at a lower level after one semester.

The CDU-governed South State does not have the *Förderstufe* for grades five and six.

School Standards

The percentage of students from a given *Grundschule* who enter a *Gymnasium* tends to be viewed by many fourth-grade teachers as a sign of success, an indicator of productivity, and a benchmark for comparison. While a low-achieving elementary school may send 10 percent of its fourth-grade class to a *Gymnasium*, the percentage for a high-achieving school may exceed 50 percent.

There is a strong connection between the quality of education in the primary grades and a student's success at the lower secondary level, particularly at the *Gymnasium*.

The parents we interviewed spoke freely about the strengths and weaknesses of their children's schools, drawing on comparisons based not on objective evidence but on conversations with other parents and the performance of *Grundschule* "graduates" at *Gymnasien*. At Maple Village, parents who said they expect their children to attend the *Gymnasium* were the rule, while parents of Oakwood students with the same expectation were the exception.

One mother's perception that other *Grundschulen* have higher standards and demand more from their students in math and German was based on her son's experiences.

> Writing essays, learning vocabulary. All of this is treated in a somewhat cavalier manner. Maybe not by all teachers, but there are those teachers who believe that the first 2 years of school should be stress free. It's an unbelievable shock for them when they enter the fifth grade.

Her son is now having problems in German at his *Gymnasium*, which she attributes to shortcomings in his *Grundschule* education. She admitted that he developed other abilities and skills such as self-confidence, musical talent, and public speaking.

A mother of a student at Oakwood observed that students at Oakwood have more difficulty adjusting to the *Gymnasium* than their counterparts from other elementary schools. Oakwood does not "cover the same ground at the same pace" as schools with a smaller percentage of foreign students. However she expressed satisfaction with the quality of education her daughter was receiving, considering the location of the school and the high percentage of foreign students. Her daughter's teacher regularly assigned extra work and devoted time to the four or five outstanding students in the class. Nevertheless, she was convinced that the situation was better at schools in "middle-class" neighborhoods, areas with parents who are "architects and engineers" who were more concerned about academic quality or who could afford to hire a tutor for their children. The father said that he wished that the best and brightest students had the opportunity to attend another school "where there is order" and where they would not be teased by their classmates.

While relatively few students from Oakwood continue their schooling at a *Gymnasium*, those who do perform at the level of their classmates. An Oakwood teacher recounted the story of a mother from a neighboring middle-class community who expressed concern about the potentially negative impact of the "Oakwood students" on their classmates at the local *Gymnasium*. During the first few weeks of the school year, the teacher assured her that they were performing on par with their classmates who had attended other *Grundschulen*.

Lower Secondary Schools

Among the lower secondary schools we visited were two combined *Haupt/Realschulen* and a *Gesamtschule* in Central State, a *Realschule* in South State, and a combined *Haupt/Realschule* in East City.

Although most schools that we visited at this level were schools with both *Hauptschule* and *Realschule* students, students in these combined schools attended classes based on the track that they were "enrolled" in. Classes for *Hauptschule* students clearly offered a curriculum, which was at a more basic level than that offered to *Realschule* students. However the students we met were all eager to talk about their view of schooling and their academic or vocational plans. As confirmed through our interviews with teachers, *Realschule* students seemed to participate more actively in their classes than did *Hauptschule* students.

In this section we examine the current status of the lower secondary schools, with regard to curriculum development and implementation, textbooks, homework, exams, and grading. The conversations that we had with teachers, administrators, students, and parents from these schools, as well as the classroom observations in math and science, offered insights into the application of multiple sets of standards and the existence of differing expectations, aspirations, and opportunities.

Curriculum Development and Implementation

The curriculum. The guidelines issued by the Ministry of Education in Central State are comprehensive and open-ended. There are separate curricula for math and each of the sciences that apply to all lower secondary schools. The guidelines also include suggestions for adapting the level of difficulty and presentation of the curricula to students at the different school forms. Each of the curricula guidelines covers tasks and goals, pedagogical considerations, tips for developing lesson plans, and the content of, for example, biology instruction (physiology, anatomy, psychology, genetics, and ecology).

The guidelines also include a comprehensive outline of the number of periods each subject must be taught at each grade level. For example, Central German *Hauptschule* students receive a total of 20 periods per week over 5 years (an average of 4 periods per week each year) of instruction in math through the 9th grade, 7 periods for biology, 4 for chemistry, and 6 for physics. *Realschule* students have 24 periods per week of instruction in math, 8 in biology, 6 in chemistry, and 8 in physics. In both school forms, math ranks second (behind German) along with English (in the *Hauptschule*) or the first foreign language (in the *Realschule*) in total hours of instruction.

The challenge for teachers is to transform the curriculum guidelines into specific lesson plans. According to *Realschule* teachers, the math in the *Realschule* and *Gymnasium* is basically the same in terms of content but not in depth and orientation. As in other subjects, the *Realschule* is more practice-oriented. In fact, a *Gymnasium* teacher in South City, in describing the differences in the way math is taught in these two schools, remarked that students from his *Gymnasium* would probably be unable to pass a math exam at the *Realschule* because of this difference. In addition to the differences in the depth and presentation of math between school forms, there is some variability between tracks offered at the *Realschule*. For instance, at a *Realschule* we visited in South State, the curriculum in 9th-grade math in the natural sciences track was roughly equivalent to that of 10th-grade math in the business track.

The table below gives an overview of the periods of math instruction per week throughout lower secondary school.

Table 1—Periods of math instruction per week in various tracks at the three school types in South State

Grade	*Gymnasium*		*Realschule*		*Hauptschule*
	Math/ Science	Language	Math/ Science	Business	(All tracks the same)
5th	4	4	5	5	5
6th	4	4	5	5	5
7th	4	4	4	4	5
8th	4	4	4	3	5
9th	4	3	5	3	5
10th	4	3	5	3	
11th	5	3			

SOURCE: Researcher's interviews.

The prevailing view among *Hauptschule* and *Realschule* teachers in Central State was that many of the official framework curricula were no longer relevant. According to a physics-technology education teacher at a combined *Haupt/Realschule*, who was also the school's assistant principal, the curricular guidelines in math and the sciences had lost their significance. He said that, as a result, teachers relied on ministry—approved

textbooks to develop the curriculum in math, biology, chemistry, and physics. He also noted that there was a lack of cooperation among faculty in designing lesson plans based on curriculum guidelines and in agreeing on a common set of course objectives. Given the work involved in developing a comprehensive curriculum, "most teachers are concerned only with teaching their weekly workload of 26 periods." Another *Hauptschule* math-technology teacher said:

> At this school, curriculum development is very laid back. It should really not be this way and I regret it very much. I'm the department head for technology education, and I've been trying for 4 years to strengthen cooperative relationships among my colleagues, but without success. Every teacher works for himself. That is also the case for math. There is no curriculum in this school.

Another *Hauptschule* teacher said the curriculum development process in his school was based on the motto: "I'll do a little bit of this, a little bit of that; it will somehow all work out." To counteract this drift, many teachers recommended more assistance, guidance, and orientation, so that specific learning objectives could be realized by the end of each school year.

At present, there is no system in Central State *Hauptschule* and *Realschule* to determine whether or not learning objectives are met. This means that cooperation is "coincidental not institutionalized," in the words of one teacher. This teacher described the situation as follows:

> Cooperation increases the likelihood of greater accountability. This represents a problem for many of my colleagues. Indirectly the classroom door is opened. There is a silent majority, which prevents this. In this situation I would not rely on persuasion but power. But then again, I'm not the Minister of Education. (*Hauptschule* teacher, Central State)

Other things also influenced the delivery of instruction and student achievement. *Hauptschule* teachers said that one of the frequent challenges that they face is the resolution of conflicts that arise. These must be addressed before any meaningful learning can take place. For example, there may be a girl who does not know how to deal with her anger, a boy whose father beat his mother before school, or a girl who is always trying to monopolize the teacher's attention.

Teachers said that unlike many of the *Hauptschule* students, *Realschule* students tend to come from more stable and supportive homes, where parents are aware of the relationship between academic achievement and future employment opportunities. In addition, they are often better students. As a result, *Realschule* teachers are able to devote more time to the business of teaching their courses.

The *Realschule* math curriculum emphasizes problems related to the real world and introduces concepts that students can make use of in their lives. Although the state's curricular guidelines are binding, teachers in Central State said that they do not feel constrained because of the decentralized nature of the education system. In addition, a math-physics teacher said that it was easy to follow the official curricular guidelines, since the author of the eighth-grade mathematics textbook used in that school had also worked on the curricular development commission.

Most of the *Gesamtschule* teachers we spoke with in Central State also described a high degree of freedom and flexibility in interpreting the state's curriculum guidelines. A science teacher used "evolution" as an example of this, explaining that while he is required to cover this topic in eighth-grade biology, it is up to him whether to discuss the evolution of the horse or of human beings. He said that this freedom allows teachers to adapt the curriculum to their own interests. An exception to this was the content for chemistry for ninth-grade *Gesamtschule* students, which is less flexible and more demanding for the sake of those who plan to continue their schooling in the upper level of the *Gymnasium*.

In South State, as in Central State, curricular guidelines are issued by the Ministry of Education. However, the *Hauptschule* and *Realschule* have a more distinct identity than they do in Central State. They are clearly differentiated from each other and from the *Gymnasium* in terms of curricula. The *Hauptschulen* and *Realschulen* in South State also have higher standards and therefore better reputations and more prestige than they do in Central State.

The curriculum for the *Realschule* is a 450 page document which describes the education and training goals and philosophy of the school, outlines the curriculum for each grade, and details what is to be covered in each subject, including the number of periods allocated to each topic. In addition, all *Hauptschule* 9th-graders and all *Realschule* 10th-graders in South State must take a centrally developed completion exam in order to graduate. As an instrument of accountability, this exam defines the curriculum which must be covered in the classrooms.

Unlike Central State, teachers in South State said that curriculum development within schools is marked by a high degree of cooperation among teachers. For example, a teacher may evaluate tests given by her colleagues to determine if they are comparable in terms of the level of difficulty. Or, teachers may exchange tests, something that is virtually unheard of in Central State.

Teachers we interviewed at a combined *Haupt/Realschule* in East City spoke of the difficult transition from a centrally prescribed curriculum, in the days of the German Democratic Republic (East Germany), to a set of curricular guidelines issued by the state Ministry of Education. The current state curriculum guidelines for chemistry in grades 8 to 10 are similar to those of South State. They include summaries of topics for each grade, with reference to related topics covered in preceding grades. For example, guidelines for eighth-grade chemistry refer to the sixth-grade biology curriculum, where

students cover the significance of oxygen as a life-sustaining substance. The *Realschule* track of the combined *Haupt/Realschule* has seven "learning areas," such as chemical reactions, air and water, atoms and molecules, reaction of acids, and metals.

Reduction in instructional periods. One complaint heard from teachers across school types was that steady cutbacks in class periods since the early 1990's were adversely affecting teaching and learning. In the *Gesamtschule* in Central State, biology and the other science courses formerly had double class periods; eighth-grade chemistry and biology are now taught for 1 hour a week. Teachers said that this leaves little flexibility and time to pursue students' interests.

While the *Realschule* math teachers we spoke to expressed satisfaction with the curriculum, they shared their colleagues' disillusionment over the gradual reduction in instructional hours. One math and physics teacher told us that when she began her career physics was taught for one period per week in the 6th grade, three periods per week in the 7th grade, and two periods per week up to and including the 10th grade. Physics is no longer offered in the 6th grade in Central State, and it is taught only two periods per week in the 7th grade, and for only one period in the 8th and 10th grades. Tenth-grade math has been reduced from five to three periods a week. "You could really work at a leisurely pace. Now, with three periods some students are left in the lurch. Nevertheless, nothing has changed in the curriculum," one teacher explained. She described a no-win situation in which teachers could not do justice to both the subject matter and the students' needs.

Textbooks

Many *Hauptschule* teachers said that they develop their own curriculum based on the assigned textbook. Criticisms of the math textbook, shared by students, included poor explanations and lack of suitability for independent study. An English and civics teacher complained about a textbook containing characters with whom the students could not identify and in which the material was presented in contrived situations. One of the main purposes of each chapter is to present a grammatical point, and this is made too obvious in the readings and dialogues. She claimed that success was minimal as a result of the methodology, the textbook, and its distant relationship to the real world.

At the *Realschule*, teachers said that the textbook is all-important for mathematics but rarely used in physics, because the current text is too difficult. One teacher explained that she distributed the physics text in class from time to time when she wanted her students to read a specific section. After the work had been completed, students returned the books to the shelves.

> The children aren't able to work with the book. The authors were not successful in developing a textbook, which could easily be used by children. There are some parts which can be used in the classroom but which still require explanation. But to use the text as an integral part of the course. . .impossible.

Teachers said that to compensate for the shortcomings of the texts they have to develop many of the materials on their own.

At the *Gesamtschule*, one of the science teachers we spoke to preferred not to work with textbooks. Students in an eighth-grade biology class that we observed did not have books. Instead, there was a limited number of books which the teacher occasionally handed out in class and which the students returned before class was over. The reason the teacher offered as to why each student did not have his or her own book is that they "do very little with the books at home anyway." As in the other school types, the purpose of textbooks, especially in the sciences, is to provide information about a particular point and to serve as a reference. This is based on the rationale that students must learn the material in class from the teacher and class discussion rather than from a book. There was also a shortage of books because of budgetary problems, in spite of the official regulation that all schools in Central State must provide textbooks and other required materials free of charge.

Homework

Homework is not as important at the *Hauptschule* as it is at the *Realschule* and other school types. One *Hauptschule* teacher assigned math homework every day but not on weekends, because he believed that students should have time to relax. "The workload is not particularly heavy, because the kids are involved in other activities, such as part-time jobs, sports, and afternoon native language instruction," he explained. Homework is generally not graded but is checked for completion. The same teacher also collected notebooks 2 or 3 times a semester to see if the students were solving the problems correctly.

Another teacher admitted to not assigning homework in order to "make life easier" for herself and because it is a "senseless task" to check homework. The only exception is when there is a need to review material or occasionally prepare for the next class. The only reason she collected student notebooks was to determine whether they had met the nonacademic criteria that appear on the report card, such as diligence or behavior. She characterized this routine as "an idiotic task."

Not surprisingly, *Hauptschule* students generally spend less time on homework than their peers at other school forms. The students we spoke to spent between 30 minutes and 1 hour each day on homework, most of which is assigned in English, German, and math. Even the most involved parents were not well informed about the type or frequency of homework assigned to their children. One mother was adamant that it was not her job to check up on her daughter. In response to a question about the frequency with which homework was assigned, she replied: "I have no idea. I don't check up on her. I think she's old enough. That's her problem. She has to answer to the teacher. I have nothing do to with it." Her husband agreed that it is their daughter's responsibility.

Realschule students had homework nearly every day which usually took them from 15 to 30 minutes per major subject to complete for a total of 1 to 2 hours each night. In the *Realschulen* we visited in Central State, homework is never graded. However, it is signed by the parents and checked in class by the teacher to make sure the work was done correctly. According to the parents, the purpose of homework is to enable teachers to determine whether students have learned what has been taught in the classroom. One mother of an eighth-grade boy was against assigning too much homework, because she felt it was important for children to have sufficient leisure time to relax and prepare psychologically for the next day's work.

One of the teachers at a *Gesamtschule* admitted that he was not a "big fan" of homework. He said that he gave very few assignments and these usually took no more than 10 minutes to complete. In contrast, the teacher's son, who attended a *Gymnasium*, spent up to 3 hours per day on homework. The same teacher rejected the view that teachers who assign a lot of homework are better teachers.

Teachers frequently stated that one of the problems immigrant students face is that their parents often have a poor understanding of German and therefore frequently show little interest in their children's schoolwork. One Turkish student explained that whenever he had problems with a homework assignment there was no one to help him. As a result, he often came to school unprepared and ended up receiving a failing grade for not having done his homework. In addition, he must also help his younger sister with her homework. In reaction to the lack of assistance and support from his parents, he felt that students should be able to complete their homework in school to eliminate the advantage that some of his classmates have.

Exams and Grading

The standards for grading vary with the level of difficulty expected at the various school forms, with the most rigorous grading standards upheld at the *Gymnasium*. One teacher compared a 1 in the *Realschule* with a "3" in the *Gymnasium*, adding that students who are poor at the *Gymnasium* with a "4" or "5" are able to achieve a "3" in the *Realschule*. The grading differential between the *Realschule* and *Hauptschule* was estimated to be in the range of 1 to 1.5 points as well.

Report cards are issued twice a year in all of the school forms, and as with the major exams, the report cards must be signed by a student's parents. A student's grade for each subject consists of exam scores, class participation, homework, and quizzes.

Hauptschule students take six to eight exams per year in each of their primary subjects of German, English, and mathematics. However, *Hauptschule* students' preparation for exams is generally minimal. One student, who had been transferred from the *Realschule* because of failing grades, admitted to doing no preparation for exams "because it is not necessary once you learn the subject matter." In addition, teachers said that in most cases *Hauptschule* students need only attend their classes on a regular basis to receive a passing grade.

Hauptschule students in Central State are rarely held back. In order for a student to be promoted to the next grade, every "5" on a student's report card must be averaged out by a "4" in another subject. Although report cards are sent home to be signed by parents, students said that grades are not normally discussed with their parents. One ninth-grade teacher described the report card as "the notification of the school to the parents about the academic progress of their children." Parents have the option of making an appointment with the teacher, who must be able to justify the grades. In cases of extreme dissatisfaction, parents in Germany have the right to take legal action; however, this never occurs in the *Hauptschule*.

As a means of coping with large numbers of foreign and immigrant students, one *Hauptschule* teacher assigns "individual grades" to foreign students who will only be in Germany for a short period of time. She explained:

> This can be done for children who are in Germany only for 1 year; other children understand that one distinguishes between students and makes differing demands. You just say 'that's a grade for Giovanni, that's his grade.'

Then she makes a note on the report card so that language handicaps are taken into consideration.

Realschule students take six major exams each academic year in their primary subjects, including math. The students we spoke to did limited preparation for math exams, and preparation mainly consisted of reviewing homework and the textbook. One student admitted to only looking over his notes before school on the day of the exam. He explained that "If you don't know how to do the stuff by then, you're not going to be able to do it during the exam anyway." In science, students are evaluated more on the basis of in-class experiments than on written work.

Realschule teachers in Central State generally develop their own exams. One teacher explained that she occasionally developed math and physics exams in cooperation with a colleague; however, this frequently did not work because the other teacher has a less capable class. It could also be difficult to settle on the same date to give the exam. In response to a follow-up question about grading and the level of difficulty, this teacher noted that the material covered in the "weaker" class was different and that it was possible and "probably easier" to receive a "2" in that class than in hers.

As in the *Hauptschule* and *Gesamtschule*, very few *Realschule* students are held back in Central State. A failing grade in two major subjects (e.g., math and German) will result in having to repeat the grade. However, it is possible to compensate for a failing grade in one subject by receiving a higher grade in another. For example, if a student receives a "5" in religion and a "2" in physical education, she will pass.

In South State, *Realschule* students' grades are based on four exams in the primary subjects of English, German, and math, and on short oral exams of 10 or 15 minutes duration, which can take place anytime. The teacher only has to inform students that they will be graded on their responses. The pop oral exam may deal only with content from recent classes. All other courses have two major exams per year and one pop oral exam per formal test. In addition, the standards for promotion are higher in South State than in Central State. *Realschule* students in South State will be held back if they receive more than one grade of "5."

Completion. Students in Central State graduate from the *Realschule* by maintaining a satisfactory grade point average. This is the case in many states; however, in some states such as South State, *Realschule* students must take a centrally developed completion exam following the 10th grade.

As with the central *Abitur* in South State, there is a comparison at the end of the year among all of the schools, and average grades are publicized throughout the state to monitor trends for particular classes, teachers, or schools. The results are used by the Ministry of Education to evaluate performance, and teachers must justify a negative deviation from the average.

Although *Hauptschule* students do not take completion exams in most states, the grades which they achieve at the *Hauptschule* can be important determinants for future education and training opportunities. As a result of credential inflation, *Hauptschule* students face stiff competition for apprenticeships in part-time vocational schools. One 16-year-old immigrant student had plans to attend a *Berufsschule* after graduation to study auto mechanics. His below-average performance in school, however, would make it exceedingly difficult for him to secure a place in the school and an apprenticeship in his chosen field. In a moment of candor and introspection, this student expressed regret at not having worked harder in *Grundschule*, so that he could continue his education in the *Realschule* instead of the *Hauptschule*. As he has gotten older, this student has realized how important a higher school qualification is and its implications for further education and the world of work.

Classroom Observations

The following classroom observations provide an opportunity to compare and contrast the different school types, focusing on the level of instruction and different challenges that teachers may face.

Hauptschule: Ninth-grade math. The classroom was located in a converted building across the street from the main school building. Of the 13 students in the class, the majority were foreigners, some of whom were still learning German. The room itself was rather colorless with several computers at the back and one at the front, all of which had been donated.

The work, which was done on the chalkboard, included figuring out percentages and interest. For example:

Old Price 998.00 DM 100 percent
-Discount 119.76 DM 12 percent
New Price 878.24 DM 88 percent
100 percent = 99,800 DM
1 percent =998
12 percent 998*12 11976/100=119.76

The teacher emphasized the importance of working out an equation rather than simply identifying the correct answer. While he worked with students at the board, several others talked amongst themselves. The atmosphere was relaxed and informal. The teacher often told students to "turn around," "be quiet," or "calm down" in order to maintain discipline.

Toward the end of the class, one boy volunteered to work on a problem on the board. A bill totals 375 DM and 14 percent of that amount is sales tax. Assumption: 114 percent is contained in the price. What is the actual net amount? 375/114

375 (125)/114 (38) * 100 (net)

A fair amount of class time was taken up with the teacher's admonitions to students who were misbehaving, which limited the time spent on solving math problems and responding to student questions. The foreign or immigrant students seemed to be the most attentive and focused on the task at hand.

Realschule: Eighth-grade math. The following classroom observation gave us a sense of how *Realschule* eighth-grade students differ from their peers in the *Hauptschule*, not only in terms of course content but also behavior and attitudes towards the subject matter.

The teacher asked the 20 students in the class to solve the algebra problems she had written on the board. Students raised their hands and snapped their fingers to be called on to do the work. She encouraged them to calculate, not guess. If a boy or girl was having difficulty solving the problem, the teacher called on classmates to lend a hand.

The classroom atmosphere was lively and positive. The students were orderly and focused, but there was occasional talking and kidding amongst themselves. An occasional note was passed from one student to the next. The teacher's style was one of firmness and humor. ("If you don't keep quiet, you'll be next person to go to the board.") The same four to five students usually volunteered to solve a problem, and the teacher did not call on others. With some exceptions, most of the students appeared to enjoy math. The teacher later remarked about the motivation of the class and the relaxed classroom atmosphere, adding, "I have the impression that math is the favorite subject of most students, because it doesn't deal with opinions. The answer is either right or wrong; everything is somehow clearer."

The next task was to solve two problems, one of which was mandatory and the other optional. During this time, the teacher moved about the classroom and helped those who were having difficulties. The students were then allowed to work together. The problems were later put on the board and discussed. As in other math classes, the teacher emphasized the process of isolating and finding the value of "X" over simply identifying the correct answer.

The third and final task was to solve several problems from the textbook. The teacher's instructions were to work alone, if at all possible. She appeared to want to find out the extent to which the students understood the material, and she made it clear that the work would not be graded.

Realschule: Ninth-grade math (Business track). The teacher began the class by writing a list of questions and topics on the board that would be covered in the lesson. He was very deliberate and methodical in this. The 33 students, an equal mix of boys and girls, all paid attention and copied what he wrote down. After outlining the agenda for the day's lesson, the teacher worked through it point by point. He asked questions about how the problem should be answered. If the student was correct in his response, then the teacher would write the answer on the board. If the student was not correct, the teacher would either make light fun of him or simply pass quickly to the next person. At one point, the teacher asked the students to pull out their calculators and calculate the answer for a problem. The structure of the lesson was simple, clear, and repetitive, and there was a high degree of cooperation on the part of the students. As a math class in the business track this course represents 2 years of work stretched over 3 years and was combined with practical math, such as accounting, since someday many of the students would be in the business world.

Gesamtschule: Eighth-grade biology. The purpose of the class was to summarize a film the students had seen on the life of the Neanderthal Man. The teacher, a man, began by asking the students questions about where the Neanderthal Man was from, when he lived, and details about his lifestyle and culture. In the course of these discussions he touched on tool-making, burial of the dead, and hunter-gatherer societies. He deflected guesses with humor and called on other students for the correct answer. If no one knew the answer, he supplied it.

After discussing the chronological order of each type of ancient man, the teacher gave the students the in-class assignment of cutting out skulls, body shapes, and tools on a worksheet and pasting them on another worksheet under the corresponding categories and historical periods. Each column had to be labeled by the students. Those students who were unable to complete the work by the end of class did it as a homework assignment.

This class focused on low-level cognitive skills and revolved around the teacher with minimal student participation. The final in-class activity of cutting and pasting shapes and the homework assignment were reminiscent of an elementary rather than a junior high school project. The teacher later admitted that eighth-grade biology has relatively low standards, adding that he "tries to make it fun but the class is not intellectually demanding."

Parental Involvement and Expectations

Although both *Hauptschule* and *Realschule* parents expressed concern about the quality of their children's education, the former tended to have a more laissez-faire attitude toward education, while the latter were actively involved in their son's or daughter's education, including school governance through membership in parents' councils. Compared to *Gymnasium* and *Realschule* parents, the *Hauptschule* parents had few expectations about their children's academic or career path. To the contrary, several expressed concern over what they perceived to be excessive performance pressure in the school. One mother made it clear that she does not actively "check up" on her daughter but rather waits to hear from the school if there are any problems. This "hands-off" approach was a reaction to her upbringing, to "performance pressure" and to parents who think their children "must be the best, have everything, get their *Abitur*, study at a university. . . ."

Realschule parents said that they viewed school as a means of acquiring knowledge that would be useful later in life, to prepare for a profession, and to make their way in society. What they expected from the school was a sense of community, small classes, teachers who cover the material at a pace which allows all children to learn, and an open and informal atmosphere.

Unlike their peers at the *Hauptschule* and *Gesamtschule*, *Realschule* students had parents who were supportive of the school and their work. They spoke enthusiastically of the practical value of acquiring basic arithmetic skills to handle money or, in the case of an architect, more advanced math skills to be able to design a building. Another difference was that the *Realschule* parents we spoke with generally had a higher level of education than the parents of the *Hauptschule* students, and they were therefore employed in professions that required at least a vocational qualification.

Although the *Realschule* students we interviewed had not given a great deal of thought to their postgraduation plans, their parents had definite ideas about how they envisioned the future. One mother envisioned a *Realschule* diploma and a trade for her son, while her friend hoped that her son would graduate from the *Realschule* and continue his schooling at a specialized *Gymnasium*, where he could earn an *Abitur* and enter the business world. In addition, both parents expressed the hope that there would be jobs for their children when they were ready to enter the world of work and that they would end up doing something they enjoyed.

Consistent with its designation as the "dumping ground" of the German education system, the *Hauptschulen* which we visited in Central State attracted students who were not qualified to attend any other school form and teachers who, in some cases, happened to be teaching in a *Hauptschule* because no other positions were available.

Teachers said that many *Hauptschule* students came from families that were not particularly supportive of education or oriented towards academic achievement. In addition, parental involvement in school activities was virtually nonexistent. One *Hauptschule* teacher reported that only two parents came to an open house. To compensate for this apathy, some teachers reached out to parents by calling them on a regular basis to discuss problems that their children might be experiencing. As one teacher told us, "Children stumble sometimes. It is then that we as adults most hold out our hand for a moment and let them regain their balance and continue to make their way." The assistant principal of a combined *Hauptschule* and *Realschule* also had this to say about the importance of supportive teachers.

> *Hauptschule* teachers must be accepting and willing to let the kids become a part of their lives emotionally. This differs from *Gymnasium* students, who have the ability to compensate for the lack of interaction and contact that they have with their teachers.

According to several teachers, although many *Hauptschule* have a high percentage of foreign students, the German students cause most of the problems. They attribute this to the parents' lack of involvement in their children's lives, and they noted that parents who take an interest in their children's schoolwork have their sights set on either the *Realschule* or *Gymnasium* for their child.

> The children of those parents who don't care go to the *Hauptschule*. The children are left alone. Their parents don't come to the open house, don't come to the school for appointments with teachers and so on. They're afraid of the school. The foreign children are the stronger students. A stronger work ethic. They work like there's no tomorrow. The German children just sit there and marvel. (*Hauptschule* teacher)

The *Gymnasium*

Gymnasien tend to be more formal than the other school types and are staffed by teachers who enjoy the various disciplines more than the study of education. A teacher from South State explained that "the *Gymnasium* teacher does not understand his role as ensuring that the kids learn something. He merely provides them with an opportunity to learn something. This is the old Humboldt ideal of education."

The interviews with students confirmed that most German young people who attend a *Gymnasium* tend to be high achievers who are as industrious and conscientious as they are articulate. They also generally have the full support of their parents. While many have fathers and mothers with a college education, others have parents who learned a trade but want their children to study at a university—an opportunity that the parents were denied.

Differences Between States

As the elite institution in Germany's K–13 education system, the *Gymnasium's* mission is to educate exceptional students who plan to continue on to a university education. Yet, it was clear from our interviews and visits to schools in Central and South State that the term "exceptional" takes on very different meanings in each state. These differences reflect the educational priorities of two political parties: Social Democrats (SPD), who wish to increase access to education, and Christian Democrats (CDU), who believe that the only way to maintain high standards is to retain a clearly delineated and highly selective tripartite system. As a result, the standards for admission to the *Gymnasium* are higher in South State than in Central State.

> When a student moves from northern Germany to South State, he may have to repeat a class. But if a central German student moves to northern Germany, he can skip a year. (A parent/teacher from South City)

These variations are to some extent the result of differences between urban areas (such as the city of Hamburg) and agricultural areas (such as rural Bavaria), but political viewpoints also play a large role in the rate of graduation from the *Gymnasium*. Conservative Bavaria with its centralized *Abitur* places a premium on rigorous academic selection, which contributes to the widespread perception that the *Abitur* in Bavaria is more demanding than it is in other states. A spokesman for the Bavarian Ministry of Culture stated in a recent newspaper article that, "We still have an effective education system which doesn't send just anyone to the *Gymnasium*." At the other end of the political spectrum, Hamburg attempts to provide as many options for academic advancement as it possibly can with its emphasis on equality of opportunity. Among eighth-graders in Hamburg, 15 percent went to a *Hauptschule* and 20 percent to a *Realschule* in 1993, while 24 percent attended a *Gesamtschule* and 35 percent a *Gymnasium*. Among Bavarian eighth-graders, the figures are quite different: 38 percent attended a *Hauptschule* in 1993, 30 percent a *Realschule*, and 27 percent a *Gymnasium* (*Statistisches Bundesamt* 1993).

Research conducted at *Gymnasien* in Central and South City revealed a clear example of variations between the states in terms of how education standards are established, implemented, and assessed.

While *Gymnasien* in Central State are theoretically comparable in terms of course offerings and quality of education, notable differences do exist. Some *Gymnasien* are more demanding than others, and, since the *Gymnasien* in Central Germany construct

their own *Abitur* exam questions, the difficulty of the *Abitur* can vary with the standards of the school. As a result, urban students seeking to obtain an easy *Abitur* may choose to attend a *Gymnasium* with lower standards, while those interested in achieving an *Abitur* from a highly regarded *Gymnasium* may enroll in a *Gymnasium* that has an established reputation for rigorous standards. Although obtaining the *Abitur* with the best grades possible is the ultimate goal for most *Gymnasium* students, those who graduate from a highly regarded *Gymnasium* have an advantage in obtaining vocational training, entrance to a university, and a job.

In contrast to the variability that can be found among *Gymnasium* in Central State, South State monitors academic achievement within and between *Gymnasium* in an attempt to ensure comparability. All *Gymnasium* students within the state take the same *Abitur* exam, which is developed by the Ministry of Education. This central exam provides the primary mechanism of monitoring and controlling standards of education at the *Gymnasium* level. East City's state has also adopted a system with a centralized *Abitur* and curricula specific to the school type.

As one parent stated:

> It is really true; the differences are there. The other states do not have a central *Abitur*. Rather, the *Abitur* is made by each school, so naturally the schools can adapt their questions to the ability of the students in the schools. The central *Abitur* results in higher standards, and the students must accommodate themselves to these standards rather than tailoring the *Abitur* to the students.

In Central State, the perception of declining standards among *Gymnasien* was an overarching theme in most of our conversations with all types of teachers, parents, and students, including eighth-graders. Most respondents looked to South State as the ideal of academic excellence and high standards. A frequent statement was that there have been too many political changes in Central State that have had a negative impact on the schools, teachers, and students. There were comments about children being used as "guinea pigs" for new curricula, the ministry's failed experiments with new structures, and the emphasis on teaching to the "average" children at the expense of the high achievers. Many blamed the Social Democratic government for neglecting the "elite" *Gymnasien* in favor of the *Gesamtschule*.

Parents pointed to teacher turnover, political change, and school administration as the main causes for the decline in standards in Central State. The mother of one eighth-grader singled out the state Ministry of Education's "conscious decision to devote more attention and commit more resources to educating the general student population [in the early 1970's] rather than fostering the elite, an idea that did not fit into the political mindset of that period." According to her, this shift in policy meant that the teachers who were hired were less demanding and set lower standards for their students. Another parent from the same school said that standards are now lower, because her son's *Gymnasium* has become a neighborhood school with children from other social classes

and more foreign students. A parent at another *Gymnasium* in Central State expressed the view that there was a need for more competition among the *Gymnasien* in that state to avoid a situation which prompts students to transfer from one school to another either in search of a better education or an easier *Abitur*.

Even those principals and teachers who were supportive of the shift to mass education acknowledged that standards had declined over the years. A principal from Central State estimated that when he was in school between 3 and 5 percent of his peers attended a *Gymnasium*; now 32 percent (1993) of all 14-year-olds in Central State go to a *Gymnasium*. A colleague at another *Gymnasium* in Central State, which prided itself on the notion that "achievement is something worthwhile," spoke admiringly of the higher standards in South State and its central *Abitur*, noting that in his state not only does each school have its own standards but so does each school district.

Admission to the Gymnasium

One issue which evoked strong feelings among teachers, principals, parents, and students was the transition from *Grundschule* to the fifth grade (and first year) of the *Gymnasium*.

Central State. In Central State there are no objective criteria for admission to the *Gymnasium*. Students must generally have a 2.5 grade point average from elementary school and be recommended by their teacher. By law, parents have the right to place their child in a *Gymnasium* even without this recommendation. However many of the teachers and parents we spoke to said that they believed that too many children were being pressured into attending schools (*Gymnasium* and *Realschule*) in which they did not belong and that this often leads to a decrease in the student's desire to learn. As one *Gymnasium* teacher explained it, "if students can't cut it, they don't belong there and should be transferred to a less demanding school." Another teacher stated, "Many parents are doing their children a disservice by placing them in situations that they are not capable of handling." Several of the students interviewed shared his view.

Teachers said that they not only felt it was detrimental to the students who were pushed into *Gymnasium* against their teacher's recommendations but also detrimental to standards at the *Gymnasium*. One teacher said that because of the influx of students to the *Gymnasium*, "the grades are getting better and better and the standards lower and lower."

A teacher who had taught a fifth-grade class several years ago said the most important prerequisite for success in *Gymnasium* math courses is that children are able to write out math problems in an orderly manner and have the courage to ask questions. She realized that many children are being raised in a single parent family and that they may not get the help that they need at home. For this reason, she preferred that children help each other and she gives ungraded quizzes.

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Among the students we interviewed, there was a strong awareness that they were at *Gymnasium* because of their academic talent and promise. When asked why he decided to attend a *Gymnasium*, one student described himself as "rather intelligent," adding that he had always earned good grades in elementary school and completed the fourth grade with a 1.4 (approximately equivalent to an "A-") average. He went on to say that, since he had little talent for practical work, the decision to continue his education at the *Gymnasium* was not difficult. Other students mentioned their high level of academic achievement or that they learned easily as reasons for being recommended for a *Gymnasium*.

South State. In South City, teachers and parents spoke with pride about a rational and objective system that continues to function with great efficiency because it admits only the high achieving students who are capable of performing at the level of the *Gymnasium*.

> We have here in South State a more rigorous selection process. A student who attends one of our *Gymnasien* can be more certain that he is talented in contrast to Central State, where practically everyone goes to the *Gymnasium*. There, the *Gymnasium* does not have an especially good reputation. (Teacher, South City)

Unlike Central State, which offers the *Realschule* as an option at the fifth grade, all fifth-graders in South State attend either a *Hauptschule* or a *Gymnasium*. Promising students can transfer from the *Hauptschule* to a *Realschule* or *Gymnasium* after the sixth grade. A grade point average of 2.3 in German, math, and introductory science is required for admission to any *Gymnasium* in South State. If a student does not have this average or is a borderline case, he or she can attend a *Gymnasium* for a trial period of 3 days and take a series of written and oral examinations to determine whether or not he or she is suited for this particular school form. In the past, students could compensate for a bad grade. This is no longer possible at the lower level (grades 5–10). "We would like to signal to lower-level students as soon as possible if they are not suited to the *Gymnasium*," explained one teacher.

Structure of the Curriculum

Gymnasien are divided into a lower level and an upper level. The lower level incorporates grades 5–10 and the upper level incorporates grades 11–13 (12 in some states). Separate curriculum requirements are established for each of these levels. In addition, *Gymnasien* often specialize in certain curricular offerings and students can choose among *Gymnasien* that offer one or more curricular "tracks."

Table 2—Weekly periods of instruction in math and science for grades 5 to 10 in *Gymnasium* (Central State)

Subject	Grade 5	6	7	8	9	10	Total
Mathematics	4	4	4	4	4	4	24
Biology	2	2	2	1		1	8
Chemistry				2	2	2	6
Physics			2	2	2	2	8

SOURCE: Researcher's interviews.

In grades 5–10, the curriculum can vary according to the type of *Gymnasium*. Curricular specialization's offered by *Gymnasium* often include an emphasis on classical languages, mathematics-science, modern languages, or a special arts programs. There is compulsory instruction in core subject areas, including German, two foreign languages, history, geography, mathematics, science, art-music, physical education, and civics, with elective course options available. Generally, at least two and, in some cases, at least three foreign languages are required, including English.

Courses in the upper level of the *Gymnasium* throughout Germany are taught at basic and advanced levels. The advanced courses treat the material in a more comprehensive manner and are significantly more difficult. For example, students may be required to write and present a report or conduct an experiment of their own design. Basic courses deal with the same subject matter, albeit at a more superficial level, using simple examples to illustrate key concepts and techniques.

In 1972, the Conference of Ministers of Education agreed upon the most comprehensive reform of the upper level in the history of the *Gymnasium*. This change was motivated by the expansion of the education system and fueled by demands for increased social mobility and a changing economic situation, which required a more highly educated and skilled work force. The purpose of the Bonn Agreement was to align the upper secondary sector more closely with societal demands and the needs of the younger generation.

The Reformed Upper Level of the *Gymnasium*, which was introduced in most states in the 1976–77 academic year, instituted several major changes in the structure and curriculum of grades 12 and 13. First, with the exception of South State, the upper level was no longer structured according to the traditional areas of specialization, such as math-science or the humanities. The agreement also replaced the existing system of fixed classroom teaching, where each class generally takes the same subjects together, with a system of course instruction, where each student can make her or his own schedule from the courses available. The system of course instruction generally begins in the 11th grade and is fully in place by the 12th grade. Compulsory areas of study include: (I) languages, literature, the arts; (II) social sciences; (III) mathematics, science, and technology;

(IV) religion (left to the discretion of the individual states); and (V) physical education. Within these prescribed areas, the curriculum was divided into basic and advanced courses. It was hoped that this would permit a high degree of specialization without sacrificing the benefits of general education.

Basic and advanced courses differ in a number of respects:

- number of periods per week (three periods for basic courses, five to six periods for advanced courses);
- complexity of the subject matter;
- degree of subtlety and abstraction; and
- degree to which the students are expected to master the subject matter, and students' ability to work independently.

Instead of having to take more than 10 subjects, students in grades 11–13 could individualize their course of study and concentrate on a selected number of subjects covering the 3 fields of study. However, a number of specific curricular requirements were retained. During grades 12 and 13, students are required to take a total of 22 periods per week per semester in both areas I (languages, literature, and fine arts) and III (mathematics–science), and 16 weekly periods in area II (social sciences). Students entering 12th grade must also choose two advanced courses, one of which must be either math or a science. The second can be selected from a group of courses ranging from philosophy to physics to computer science. This specialization of the *Abitur* qualification drew criticism from the university system, which admits students based on the assumption that the *Abitur* guarantees a certain level of general education.

In 1987, the KMK amended the Bonn Agreement with the introduction of new minimum requirements for the *Abitur*. Because the 1972 Reform weighted the advanced courses more heavily than the basic courses, with each advanced course counting 3 times as much as a basic course (45 possible points per course as opposed to 15), students could do poorly in core subjects without their overall grade average suffering as much as it would have previously. The 1987 "Reform of the Reform" attempted to correct this problem by preventing students from dropping "difficult" subjects and obtaining their *Abitur* in "easy" subjects. The goal of strengthening students' basic knowledge was to be accomplished by revising the entire grading scale to reduce the weight put on the advanced courses, which are now worth 30 points each. Before the 1987 Reform, the final exams, the basic course, and the advanced courses were each allotted 300 total possible points, for a total of 900 points. Since the 1987 Reform, students can earn a total of 840 points, of which 330 points come from basic courses, 210 points from advanced courses, and 300 points from the *Abitur* examinations.

Thus, the value of basic courses was upgraded, while that of the advanced courses was downgraded. Students who only performed well in advanced courses would earn approximately 30 percent fewer points in the post-1987 *Abitur*. In conjunction with the revaluation, the number of required basic courses was increased from 20 to 22, while the number of advanced courses was reduced from 8 to 6.

The 1987 Reform also required all students to be continuously enrolled in at least two (three in the Rheinland-Pfalz and the Saarland) of the following subjects: German, a foreign language (chosen before the upper level), or mathematics. At least two semesters of history or another social science subject with a historical focus were also required. Finally, if German is taken as the primary advanced course, one of the four *Abitur* examination subjects must be math or a foreign language. The following table illustrates the revised requirements introduced in 1988 by the KMK.

Table 3—Course requirements for grades 12 and 13 in the reformed upper level of the *Gymnasium*

Area	Minimum total number of weekly periods over 4 semesters	Required subjects	Minimum number of courses over 4 semesters
I. Language, Literature, Art	22	German:	2 courses[a]
		Literature/Art:	2 courses
		Foreign Language:	2 courses[a]
II. Social Sciences	16	History:	required throughout upper level
III. Mathematics, Natural Sciences, Technology	22	Mathematics:	2 courses[a]
		Natural Sciences:	4 courses
IV. Physical Education	8		
V. Religion	(left up to states)		

[a]Two of the following subjects German, Foreign Language, and Mathematics, must be taken during all four semesters.

SOURCE: Researcher's interviews.

Curriculum development. In Central State, the official curriculum guidelines give *Gymnasium* teachers a high degree of flexibility in determining what to teach. On the basis of these curriculum guidelines, faculty committees concerned with each subject decide what to cover in the course of a year. This is done in consultation with teachers in other grades to ensure a smooth transition from one grade to the next. The resolutions are considered to be binding, but they also give teachers the freedom to respond to the needs and interests of their students. Teachers said that in practice there tends to be more cooperation in the upper level than at the lower level of the *Gymnasium*.

The instructional goals spelled out in the math curriculum for the upper level of *Gymnasium* in Central State include fostering subject-related motivation and positive orientation towards math; encouraging creative thinking and originality; stressing the ability to communicate and cooperate; finding practical applications of mathematical concepts; achieving logical sequencing of mathematical concepts, facts and processes; improving work attitudes; and instilling a knowledge of the limits and possibilities of calculators and other technological aids. In addition, the curriculum guidelines feature a discussion of the differences between advanced and basic courses, an inventory of mandatory *Abitur*-related topics, and course descriptions for grades 11, 12, and 13. Each course description contains a brief description, student prerequisites, topics, and corresponding comments.

Most teachers in Central State shared the view that the general nature of the official curriculum makes it impossible to cover everything. One teacher estimated that were he to cover systematically the entire curriculum in his subjects, it would amount to the equivalent of three to four semesters of university-level study. This particular teacher has worked with colleagues in chemistry and math to create a comprehensive "coursebook" which details the curriculum for both subjects. This document was last revised in 1991 and is based mainly on the textbooks.

Since there is no accountability in this particular state in the form of a centralized *Abitur*, teacher evaluations, or ministry oversight, teachers and parents said that the quality of instruction depends upon the standards of the school and the knowledge, enthusiasm, and motivation of the its teachers. One teacher of math and physics remained in touch with former students now studying medicine, computer science, and economics, among other subjects, which gives her an idea of the quality of preparation they received in math in her class. She noted with pride that one former student studying computer science still reviewed her handouts, while another economics student reported to her that he had learned nothing new in the first three semesters of his program.

In South State, the Ministry of Education organizes work teams that have the task of examining particular aspects of the curriculum, and therefore the teaching plans and standards are developed with the assistance of teachers who are members of these teams. One teacher described the process in this way:

> It is not so that the teaching plan falls from the sky or is simply imposed from above. It is developed in a grassroots way, from the bottom up based on the insights of the practitioners. But once it has been completed, it becomes mandatory.

The ministry surveys teachers to ascertain what they were unhappy with and where they would like evolve into new curricula. The newly revised curricula do not have as many topics as before, and teachers said that there is ample time to cover the material. The curriculum in South State is revised on average every 5 years, depending upon the

necessity for change. Some topics remain unchanged while others need to be modified to keep up with changes in the knowledge base of that discipline. The comprehensive math and physics curriculum for all grades of the *Gymnasium* was last revised in 1991 and became effective from 1992–94, depending upon the grade.

The curriculum not only tells teachers what needs to be covered but guides them in how this material should be divided in each school year. For example, an advanced 12th-grade course description on analysis indicates the total number of required instructional periods (about 68), course content by subcategory, and accompanying examples. Teachers informed us that the current curriculum is not as detailed as it used to be, but that it does include the required learning objectives. This is a result of the central *Abitur*, which ensures that all *Gymnasien* in South State are provided with the same preconditions for taking the *Abitur* exams. How teachers achieve these goals is their prerogative.

Math and Science at the Gymnasium

Math is one of the primary subjects in the *Gymnasium*. One teacher in Central State highlighted the practical value of learning mathematics as a means of reinforcing and developing creativity and logical thinking skills, suggesting that it be required on all *Abitur* exams. He compared math to music in which one masters an instrument through practice and hard work. "Have you played your etudes 5 or 10 times per day?" is a question this teacher asks his students. Teachers also talked about the usefulness of a solid foundation in math for learning in other areas and how it was preferable to learn the basics in the *Gymnasium* because they are not taught at the university.

As in math classes in the *Realschule* and *Hauptschule*, the emphasis at the *Gymnasium* is on how to solve the problem rather than finding the correct solution. Observations of 11th-grade advanced math classes exemplified both the high level of instruction and the quality of students in such classes. In these courses, teachers usually did not have to wait long for students to respond to questions. Occasionally, a student would ask a question and the teacher would answer it or refer it to the class and encourage students to discuss it amongst themselves. One teacher combined a theoretical discussion of content with an occasional commentary about the importance of thoroughly justifying one's answers. If students were not paying attention, teachers did not hesitate to use either humor or subtle embarrassment as a means of admonishing them. Class participation was an important part of a student's grade. In the schools we visited, one-third of the grade in advanced math classes was based on oral participation in the class and two-thirds on two tests given in the course of the semester.

Teachers noted that although the reasons for differential enrollments in advanced math and science classes were not clear, males generally far outnumbered female students in advanced math and science courses. Out of a class of 14 advanced math students at one *Gymnasium* in Central State, there were only 2 girls, much to the dismay of the female teacher.

Effects of the budget crisis. A problem commonly cited by *Gymnasien* teachers in Central, East, and South State was an ongoing budget crisis that necessitated a reduction in instructional periods for a number of courses. (Budgetary problems are the result of a sluggish economy and the high cost of unification.) The lack of funds was widely viewed as limiting the effectiveness and quality of instruction. In one case, 10th-grade math in a central German *Gymnasium* had been reduced from 4 to 3 weekly periods. Similarly, an advanced 11th-grade math course in a southern German *Gymnasium* had been reduced from six to five periods. One teacher in Central State traced the changes in class size since 1979, when there were 40 students in a class, to 20–25 students per class in the 1980's, and 30 or more students per class in the current school year. Last year, her school was forced to consolidate 9th grade class from 5 to 4 with around 30 students each. One 8th-grade math class had 31 students in a classroom designed for 20–25. The result was a lack of focus on the work at hand and on the teacher, who spent most of his time at the front of the room. A related problem is the mismatch between supply and demand. For example, one *Gymnasium* had too many geography teachers and not enough French teachers. This is a problem of distribution and deployment that can only be solved by transferring teachers to another school, a solution which is considered problematic at best.

Textbooks

Teachers said that math and science textbooks are used mainly for reference and review purposes, not as an integral part of the course. A math teacher in a South City *Gymnasium* explained that the knowledge that he wants his students to retain is on the board; the book serves as a supplement to which he can refer his students when he wants them to review the material he has covered on the board. Upper-level *Gymnasium* students confirmed teachers' lack of reliance on texts for presentation of the curriculum. According to one 12th-grader, chemistry and physics textbooks were rarely used; rather, the emphasis was on in-class experiments and discussion of theory. He also noted that his teacher frequently covered material that did not appear in the textbook, and the student pointed to the need for more coordination between teachers of consecutive grades so as to avoid overlap and repetition.

A textbook for seventh-grade math in one *Gymnasium* covered such topics as proportionality, percentages, interest rates, probability, introduction of rational numbers, addition and subtraction of rational numbers, multiplication and division of rational numbers, congruence and symmetry, area and volume.

Homework

Most of the *Gymnasium* students we spoke with spent about 2 hours a day on homework, including Saturdays. For example, one upper-level student said she normally spent 1 hour reviewing the day's work and an additional hour preparing for the next

class. Another student, an eighth-grader, explained that he had homework every day in all subjects except music and biology. It normally took him 2 hours each day to complete his assignments. He observed that to get "1s" and "2s," *Gymnasium* students have to spend at least 2 hours each day on homework.

A 12th-grade student noted that his teachers regularly assigned homework in math and physics and rarely in chemistry. In order to "stay on the ball," in his words, students have to spend time at home reviewing the material and checking everything over. In grades 7 through 9, this student estimated that he spent about 2 hours per day on homework; in the 11th and 12th grades he spent 30 minutes to 1 hour on review and preparation and 1–2 hours on homework assignments.

As in the other school form homework is discussed and corrected but not graded. As a means of checking homework and as an incentive for the students to do the work, teachers randomly select students to go over an assignment in class.

Exams and Grading

Gymnasium students in both states have between two and four in-class exams per semester in the primary subjects of English, German and math; two per semester in biology; and one or none per semester in secondary subjects, such as music, geography, and history. Teachers periodically ask students to review a homework assignment orally and then grade them on their presentation. However, oral exams function as an increasingly important assessment tool in the 13th grade, as students begin to prepare for the *Abitur* exam.

While the number of exams differed from school to school in Central State, they were centrally prescribed in South State. For example, seventh-graders in South State have to take five written tests per year in the primary subjects, while upper-level students take four tests per year. Teachers and principals in South State noted that the exams are centrally prescribed in order to achieve comparability throughout the state.

In both Central and South State students receive report cards twice a year. The reports include grades for the individual disciplines and general comments about students' cooperation, behavior, and ability in the 5th through 10th grades. The grading formula in Central State is 50 percent for oral participation and 50 percent for exams and quizzes. What concerned one teacher of math and chemistry is that this formula penalizes students who do not participate in class but who always earn 1's on exams. The same teacher and several of his colleagues at other *Gymnasien* rejected the official grading policy on the basis that it works to the disadvantage of academically talented students. Instead of giving a reticent student a poor grade, he assigns him a 1 or a 2 for the final grade.

Many teachers pointed out that regardless of whether they develop exams on their own or (less frequently) in cooperation with colleagues, they always develop them with an eye on the kinds of problems students will encounter on the *Abitur*.

Parental Involvement and Expectations

The parents of *Gymnasium* students we spoke with were without exception well informed and outspoken about a variety of issues, including the general state of education in Germany, school standards and curriculum, and the quality of the teachers. While some were more active than others in official school activities, all were keenly interested and deeply involved in their son's or daughter's education. In addition, they were all aware of the value of the *Abitur* as a credential that opened doors to university study and the competitive vocational training opportunities necessary for advancement in professional-level jobs.

One mother who was a certified social worker had always wanted to attend a *Gymnasium*, but her parents did not allow her to enroll. "My parents said 'You're a girl, you're going to get married, you don't need it.' That explains my circuitous route to the kind of postsecondary education that I had envisioned for myself." Another mother, who works part time in a bank and whose husband is a salesman, was not sure if her son would attend a university, but she wanted him to complete an apprenticeship in the dual system of vocational education after his *Abitur* so that he would have a credential and a means of earning a living. He would then have the option of pursuing a university degree. For another parent who had a *Realschule* qualification and worked in a bank, the *Gymnasium* offered the most opportunities as a springboard for future study and career opportunities for his children.

Transition to Postsecondary Education: The Abitur

> There is the problem that all schools are supposed to give children an equal education. That is, all the *Gymnasien* should be equal in quality; all the *Hauptschulen* should be equal in quality according to their own standards. And, in South State, we take the next logical step and say that if they are all equal, then we can administer a central examination. (Teacher, South City)

> Students living near Central State who are not doing well in school and who have fears of not passing the *Abitur* exam will go to a school over the border and pass the *Abitur* with flying colors. Naturally, this gives one pause. In Central State, there is no central *Abitur*. (Parent, South City)

An article recently appeared in a popular German newspaper asking in jest whether students in Bavaria are dumber than their peers from around the country. This question was raised in reference to 1993–94 statistics showed that Bavaria had the fewest *Abitur* holders (20 percent) in Germany. (Die Welt 1995) In contrast, the city-state of Hamburg claimed the highest rate of graduation from *Gymnasium*: 33 percent of the age cohort finished their *Abitur* in 1993. Other states near Bavaria also show higher rates,

ranging from 25 percent in Baden-Württemberg and Nordrhein-Westfalen to 27 percent in Hessen in 1991; during the same year, Bavarian rates were at 18 percent (Sekretariat der Kultusministerkonferenz 1993). The new states of eastern Germany had an average rate of 24 percent in 1994, up from 19 percent in 1992.

The development and administration of Abitur examinations. The KMK has established uniform examination standards for 33 subjects, which cover the academic knowledge that *Abitur* examinations are supposed to test. The 33 subjects include basic tests in every subject offered at the *Gymnasium*, ranging from Russian to psychology and computer programming, and advanced tests in those subjects which can be taken at the advanced level. The following guidelines from the national standards for biology describe the type of knowledge and skills that are to be tested on the *Abitur* examinations:

1. The recall of memorized knowledge. This includes data, facts, laws, formulas, statements and the description and application of learned and practiced techniques and procedures in a given area. Examination topics can consist of a definition covered in a class, a description of graphs and experiments, or the diagramming of a pedigree based on a given text.

2. The independent application of knowledge to a comparatively new situation. This encompasses either questions that have been rephrased or modified procedures. Examples range from the discussion of previously unknown experimental results and the description of the planning and construction of chromosome maps to the application of cybernetic models to ecological systems.

3. Complex analysis and interpretation. This area emphasizes a systematic and planned approach to dealing with complex issues, with the goal of producing independent interpretations, conclusions, and explanations. This could include the independent development of hypotheses from the results of several experiments, development of a flow chart on the basis of given ecological findings, and a critical methodological discussion of specific procedures.

Candidates are examined in four subjects, including two advanced subjects. One of the four exams must be oral. The basic and advanced written exams generally last 3 and 4 hours, respectively, while the fourth oral exam may last 30 minutes, not including preparation time. Exams are conducted by the student's current teacher in the presence of three others, including a recorder, another teacher for the same subject, and a chairperson. The entire *Abitur* exam is a rigorous and demanding rite of passage, which lasts up to 14 hours. The exams are taken during the second half of the 13th grade in most states but toward the end of the 12th grade in some states in eastern Germany.

The *Abitur* tests students on material which they have covered through the first semester of the 13th grade. Since it is assumed that the *Abitur* should be a test of what the students have learned in class, a completion exam also assumes a certain amount of articulation and cooperation between teachers of the same subject in different grades.

In states that have a centralized *Abitur* system, every *Gymnasium* receives the exams in sealed envelopes from the state ministry of education on the day of the exam. One consequence of this system is that teachers must cover all of the prescribed material, which leaves little time for lengthy discussions about a particular topic. In Central State the advantage of the school-based *Abitur* is that there is more flexibility and room for experimentation.

In Central State, selected teachers write two possible sets of problems, a task that normally takes them 2 or 3 days to complete. In addition, they write a description of their expectations of student performance for each part of the question as well as their evaluation criteria. One example of a proposed basic physics exam included the following course topics from the relevant semesters:

12/I	electric and magnetic fields;
12/II	electromagnetic oscillations and waves; and
13/I	atomic physics and nuclear physics.

The teacher submitted these two summaries of the proposed topics and types of problems:

a. The path of electrically charged particles in an electrical field. Physics of the atomic shell, hydrogen spectrum.
b. Movement of electrically charged particles in a magnetic field (Hall effect). Radioactivity and dosage measurement.

Each problem was accompanied by four questions or tasks, along with a description of expectations of student performance for each part of each question, instructional prerequisites, and remarks. (Additional proposed problems and actual *Abitur* exams in mathematics, biology, chemistry, and physics can be found in appendix A.)

These questions are submitted by selected teachers to the school district office for approval. If they are deemed too easy or too difficult by examination officials, the teachers are asked to revise them. As in the other states, teachers find out on the day of the test administration which tasks were selected for the exam. Two graders usually meet to discuss grading criteria and grades. Before recording the results, teachers generally check the exams again to see if they overlooked anything that might benefit the examinee. For example, a teacher may give points for quality of thought even if the calculations were incorrect in a specific answer.

Some *Abitur* questions are inevitably more difficult than others. One teacher of math and physics told us with pride about a rumor circulating in school that her *Abitur* math exams were more difficult than those at other schools. However, she also pointed out that it makes no sense to talk about the difficulty of an examination without first being familiar with the nature and extent of the preparation. All exam candidates in mathematics should be familiar with three different areas: calculus (differential and integral), linear algebra, and probability and statistics.

While the principal of one *Gymnasium* in Central City admitted to having colleagues who would prefer to have a centralized *Abitur*, he doubted its effectiveness, saying that the exam should evolve from classroom instruction and not be developed on the basis of a checklist of items to be covered. "Only the subject teacher knows what each group is capable of accomplishing and learning in a given period of time," he observed. He did admit that there was the possibility of cheating and that it does occur, although he has not been able to prove it. Teachers also acknowledged the danger of using materials based on school-specific instruction as a way for teachers to conceivably prepare their students for the questions, which they themselves submitted. The legitimacy of the process derives from the way in which exam questions are compared and evaluated by colleagues from other schools who try to weigh and evaluate the problems and tasks submitted to the school district office. While it is impossible to eliminate the subjective element, the integrity of each exam is maintained through the ever-changing team of reviewers.

In South State, *Abitur* questions are organized by the Ministry on the basis of a survey sent to all *Gymnasien* at the beginning of each school year. For example, the Ministry asks schools to submit exam questions for the basic course in physics. Teachers must then develop a question, guidelines for evaluation, and an assessment of the question's difficulty. They must also decide whether it is considered routine knowledge, a transfer of knowledge (application of knowledge from one area to another), or whether it requires independent thought. One teacher described the process as follows:

> Here in South State there is a very detailed plan. On a given day in May there is the advanced examination in physics from 9 a.m. to 1 p.m. The questions are sent the day before in a specially sealed envelope. At all the schools the kids get the same *Abitur* exam. The questions are opened up on the morning of the exam. The teachers look through the questions and they select one from two alternatives that they want to use for the school. The correction guidelines show what is expected of the student and how the exam should be graded. Our physics *Abitur* is the same as in other cities throughout the state.

Teachers interviewed were unanimous in their view that the centralized *Abitur* has greater integrity than the decentralized system in Central State and other states. One teacher explained:

> If we could write our own *Abitur* exams, then we could leave out the topics that we did not get to in class. We could, for example, leave out atomic energy and the exam would focus on the other topics that the students dealt with in class. But in our state, the teachers do not have this luxury. They do not know what will be included in the exam at the end of the year.

In fact, the curriculum in each subject becomes more specific the closer one comes to the *Abitur*. Faculty members grade the papers using the evaluation guidelines supplied by the Ministry, an approach that allows schools to maintain a modicum of control over the examination process in spite of the centralized *Abitur*.

Adherence to the state-mandated curriculum is ensured by a ministerial representative who evaluates the comparability of standards throughout the state. This is accomplished by visiting schools and reviewing exercises and tests, along with a subject specialist whose job it is to assess the level of difficulty. If there are irregularities, the ministry official will speak with the school leadership and attempt to influence the school practices. Grading information is stored in a computer database, thereby enabling the Ministry to evaluate averages for a particular subject or even a specific question on the *Abitur* exam and to compare teachers of the 12th and 13th grades. For example, the existence of a high grade point average and low grades on the written *Abitur* would raise a red flag.

Preparation for the Abitur exam. Students generally begin preparing for the *Abitur* exam in the second half of the 13th grade by reviewing materials from the courses they have taken in the upper level purchasing published copies of old exams from bookstores, or signing up for commercially available prep courses. Teachers also provide opportunities for in-class practice, including written and oral exams.

One 12th-grader said that he viewed every in-class exam as a building block in preparation for the *Abitur* exams. He always reviewed exams in order to retain the information, and he stated that he plans to begin reading over his 12th-grade homework and exams starting in the 13th grade.

Admission to Higher Education

The *Abitur* diploma lists all grades from all courses taken in the upper level of the *Gymnasium* and a calculation of the number of points attained in 22 basic courses (maximum of 330), 6 advanced course wo[illegible]0 points each and 2 worth 15 points (maximum of 210), 4 *Abitur* exams and 4 [illegible] subjects (maximum of 300) for a possible total of 840 points. Students who pass the *Abitur*, which includes most of those who reach candidacy, receive a certificate attesting to their general qualification for entrance to higher education.

Upper-level *Gymnasium* students tend to be acutely aware of the criteria for university admission, especially in restricted (*numerus clausus*) subjects. Because of overcrowding in universities, passing the *Abitur* is no guarantee of university admission in the high-demand programs. One 12th-grader in Central State who aspired to become a veterinarian knew that she would need a grade point average of 1.6 to have a chance of gaining admission to a university. In addition to the required grade point average, which reflects coursework and *Abitur* exam results, this student was also aware that she would have to take a specialized exam for all medical school applicants.

In Germany's centrally coordinated university admissions process, student applications are treated differently, depending upon the state in which they received their *Abitur*. This is an attempt to compensate for differing standards in *Gymnasien* around the country. The student from Central State receives a "point" in addition to his grade point average (a grade point of 1.4 would be counted as 1.6, slightly worse). In other states, the student's grade point average remains unchanged. Students from South State are given a slight advantage; for example, a grade average of 2.0 would be counted as 1.8, slightly better. Despite this attempted compensation, one southern German teacher exclaimed that with university admission determined by grade point, "the students from South State are punished for being too good. This is the schizophrenia of cultural sovereignty. There is not a (national) ministry which is responsible for education in all of the states."

The Dual System: Part-Time Vocational Education

Germany's dual system of education is comprised of part-time vocational training combined with part-time study. Entrance to the dual system is gained through the successful completion of study at a *Hauptschule*, *Realschule*, or *Gymnasium*.

All young adults who want to prepare for a profession outlined by the vocational education law must attend a dual education program. As a result, each year, around 600,000 young people, two-thirds of those who have completed their compulsory education, enter training programs in the dual system. Students generally attend a part-time vocational school 1 to 2 days a week and are involved in practical training during the remainder of the week. The length of the vocational programs vary, but they are typically between 2 and 3 years in length, and they require the successful completion of a final examination.

The *Berufsschule* is the school form through which most dual education programs are offered. The *Berufsschule*, and the businesses, which provide the practical training for its students, have the mission of providing both vocational and general education related to the demands of specific professions and the world of work.

Training regulations, which have been developed for approximately 370 recognized trades and professions, establish minimum course content and are regularly updated in consultation with employers, trade unions, and teachers. Unlike the general education (K–13) schools, which are under the direct control of local and regional authorities, the responsibility for the dual system of education is shared by a number of interested parties. These include the KMK, the states, and vocational teachers along with representatives from industry, the trades, and trade unions. Representatives of each of these cooperate in the preparation of the training regulations, which form the basis for the curricular guidelines issued by state Ministries of Education. In addition, the Federal Institute for Vocational Training conducts research to monitor changes in the economy and technology.

Vocational students tend to be goal-oriented individuals who are eager to enter the world of work but who are also concerned about the economic uncertainties of the 1990's. Many students said that they view vocational training, which offers them a chance to specialize, as an opportunity to secure a position in an increasingly competitive job market. Vocational education is also viewed by some students as a springboard to further study, possibly at a university. One 19-year-old woman had a business *Abitur* and an interest in economics and working with numbers that led her to consider a career in banking. In view of the tight job market, this student felt lucky to be able to work for a bank that had already indicated that it would hire her after successful completion of the final exam.

While the students we spoke to were very positive about their decision to enter a part-time vocational school and receive on-the-job training, they differed in their assessment of how effectively education and training are integrated. Although some saw a direct link between school knowledge and practical training, others asserted that only a fraction of what they learn in school can be applied on the job. All students acknowledged that the 1.5 days a week they spend in school provide them with a basis for understanding some of the laws and procedures that guide their work in the bank.

Programs are generally divided into basic and specialized levels. Students may attend school 1 to 2 days a week and work in the private sector for the remainder of the week. A typical student might work on Monday, Tuesday, and Friday from 8:00 a.m. to 4:40 p.m. and Wednesday and Thursday from 1:30–4:15 p.m. and attend classes on Wednesday and Thursday mornings and early afternoons.

One *Berufsschule* in Central State that we visited offered vocational education programs in economics and administration, including banking, office work and small business, nutrition and home economics, sales, hotel management, and cooking. In addition to vocational subjects, students must take German, politics, religion, and physical education. A student's education concludes with a completion examination administered by the Chamber of Industry and Commerce. Teachers said that more than 90 percent of

all students from this school pass the examination with above-average scores. In addition, students with a *Hauptschule* certificate can obtain the equivalent of a *Realschule* certificate if they receive at least grades of "satisfactory" in German and attend an English course and earn a final grade point average of at least a "3."

Since teachers' salaries are paid by the state government, and nonpersonnel items are the responsibility of each locality, the main differences between *Berufsschulen* in Germany tend to be in the quality of facilities and equipment. Differences can also be attributed to different organizational structures. For instance, some *Berufsschule* are physically and administratively combined with vocational *Gymnasium* known as berufliches *Gymnasium*, and some *Berufsschule* offer vocational training according to block schedules. In block scheduling, classroom instruction and on-the-job training are not integrated into the same week, but rather offered in separate periods of time.

Berufsschule teachers said that students in their classes have become more heterogeneous than in the past. The principal of one *Berufsschule* in Central State estimated that at one time 90 percent of all *Berufsschule* students had a *Realschule* diploma. Now, there are more students with *Aburs* that enroll in the *Berufsschule*. As a result, there is a greater range in students ability. The better students tend to be *Abitur* holders, while the weaker students are usually the *Hauptschule* graduates. Teachers stated that this creates the problem of having to teach to students of differing abilities and degrees of motivation.

Curriculum Development and Implementation

Curriculum committees decide the content and standards for each of the education and training programs by voting on resolutions. These curriculum guidelines are revised once a year. Teachers said that they then use the curriculum guidelines, such as those for the banking curriculum, to develop lessons, which cover each of the topics in the guidelines. Teachers in the banking program said that they do not generally use texts, since many are outdated. They prefer to use up-to-date and concrete examples.

Teachers are generally not able to modify the curriculum, since it is linked so closely to the completion exam, 70 percent of which consists of multiple-choice questions. One teacher told us without hesitation that his main task was to prepare the students to take the final examination that qualifies them to pursue a career in banking, adding that he does not agree with those aspects of the curriculum that require him to cover material which has no practical value for bank employees. For example, the Chamber of Industry and Commerce requires that students learn about the components and inner workings of a personal computer when, in reality, what they use computers for in banking is electronic spreadsheets, word processing, and databases. Another teacher asserted that so-called key qualifications, such as teamwork, small group problem solving, and communication, should be emphasized but instead "fall by the wayside."

The training institutions also have guidelines that they must follow. Training is provided on the basis of a civil law contract between the company providing the training and the trainee. The contract covers all aspects of vocational training, including objectives, duration and amount of training, salary, and the duties and responsibilities of the trainer and trainee.

In the *Berufsschulen* visited, the role of textbooks is limited; they are used more as reference sources and for review than instructional purposes. One teacher estimated the breakdown as follows: 40 percent workbooks, 40 percent worksheets, and 20 percent textbooks. Teachers stated that texts are frequently used for homework assignments to allow students to review and internalize material. The homework is collected randomly, which means that the teacher announces that homework will be collected from five students at the next class. Compared to other school types, the homework load is light for *Berufsschule* students. One of the students told us that it took her between 2 and 3 hours per week to complete school-related assignments. In addition, she has bank-related work (e.g., writing reports about training films), all of which must be done outside school and work time.

Vocational students rarely repeat a grade; they are generally promoted and passed along until the final exam. If a student fails, it is possible to repeat the last year and extend the period of training. About 10 percent or fewer end up repeating a grade.

Classroom Observations

Classroom observations reflected the practical orientation of the *Berufsschule* curriculum and illustrated the teacher's remarks about the relevance of the curriculum for banking professionals. One class on computers, "Electronic Data Processing," was taught in a combined classroom and computer lab. The class of 15 students was preparing for an in-class examination on the personal computer to be given 1 week later. Students' questions dealt mainly with the exam's content and the material for which the student would be responsible.

The teacher emphasized that the test material would relate to what he thought they needed to know as bank employees. For example, there is no need to possess detailed knowledge of how a computer functions in order to make an entry in a savings passbook. In contrast, the exam would ask the students to define and explain the basic components of the computer, such as a mouse, screen, and keyboard and computer terminology like the CPU, RAM, ASCII, data vs. software, and ROM. The teacher pointed out several outmoded expressions mentioned in the text that have been replaced by English terms and abbreviations.

In one *Berufsschule* visited, a computer classroom had a total of 10 computers, all of which were networked and connected to the Internet. The school had three other computer labs. One of the students at this school complained about the age of the equipment. The teacher, in contrast, thought that the school was fairly well equipped in comparison to other vocational schools in the same state.

One class for 2nd-year banking students dealt with different types of loans. The class period was devoted to figuring out the costs of long-term (e.g., mortgage) and short-term (e.g., personal) loans. The teacher passed out a sheet listing the key concepts and terms discussed in the class, comparing and contrasting short-term credit with long-term credit. The two types of loans included annuity loans and loans with declining balances. The teacher provided two examples illustrating the dynamics of each type of loan. A second purpose of the class was to allow the students to acquire practical experience in developing payment schedules using computer software. The teacher wrote the directions on the board to guide them through a standard program and provided the class with four scenarios. The students worked in pairs or small groups to solve each problem and to obtain printouts of their work.

Practical Training

Application procedure and selection. Banking is widely regarded as the elite program, which teachers and students agreed is related to the image of the banks and the prestige associated with the industry and not necessarily to the ability of bank professionals to earn more than other business people.

According to the director of personnel at a bank located not too far from a school we visited, the selection of trainees is based on the quality of the application, grade point average, (especially in German math, and a foreign language), and the results of an aptitude test. The initial application procedure is actually a preselection; the more promising candidates are invited for a group interview during which they are asked questions about themselves and the banking industry. The purpose of these sessions is to evaluate what the test does not cover and to look at the content as well as the form of the applicant's answers to a variety of questions. They are separated into groups on the basis of age or school completion. The other purpose of the interview is to gauge the level of interest in banking as a profession. One training supervisor informed us that *Abitur* holders have a slight advantage in the selection process over *Realschule* graduates. In the past, female *Abitur* holders were at a distinct disadvantage, because it was thought they would get married, have children, and quit their job. Normally, banks hire a 50–50 mix of men and women who are graduates of either the *Realschule* or the *Gymnasium*. Training supervisors revealed that students with higher school qualifications will have improved career advancement opportunities over students who have a *Realschule* or other school diploma. In this region, 14–16 percent of all applicants are accepted for banking apprenticeship programs. Trainees generally receive a salary of $600–900 per month, which increases each year of the traineeship and is subject to a contractual collective bargaining agreement.

One local bank in Central State employed about 90 trainees, of whom 1 worked at a branch office we visited. There is stiff competition with other banks in the metropolitan area for good trainees. Banks actively recruit trainees; for example, 1 bank published a 50-page booklet entitled "Career Goal: Banking Professional" complete with color photos of smiling trainees and graphics. The publication included an explanation of the

dual system of vocational education, detailed descriptions of each area of banking and the curriculum, and excerpts from the 1979 federal vocational law for banking programs. It began by saying: "In this brochure we want to tell you what your training with us will be like. What we can offer you, but also what we expect from you."

Most banks make it clear from the beginning that they will only provide training without any prospects for a permanent position. In reality, however, most banks hire their trainees after successful completion of the apprenticeship. This is a result of both the thorough selection process and the fact that by the time students take the completion examination, the banks have had 3 years to observe them, evaluate their performance, and gauge their suitability as permanent employees. Once a trainee has been hired it is very rare that he is asked to leave. A personnel supervisor at one of the banks could recall only two instances in 8 years, one because of personality problems. All trainees have a probationary period of 3 months.

Apprenticeship and performance evaluation. The supervisor is responsible for the quality of the program. In addition to ensuring that the trainees are exposed to good role models within the bank, the bank also provides in-house training and seminars on such topics as customer service. For example, there may be a 2-day seminar in which the purpose is to ascertain a trainee's personality weaknesses and strengths and teach her to recognize these in herself and others.

Trainees work 3 days a week during the school year and full time during school vacations. One trainee stated that her training program rotated her through different departments of the bank for training in each area. For example, during the 1st year, she worked directly with customers for 6 months performing routine tasks and then she worked in the accounting department, where she was able to learn about how transactions are processed.

In order to receive an evaluation, an apprentice must have worked in a department for at least 4 weeks. She is then evaluated on a scale of one to seven with a written summary, which she discusses with her training supervisor. The evaluation touches on characteristics, including: subject matter knowledge, creative thinking, oral and written expression, personal qualities such as diligence, effort, and the ability to perform under pressure, collegiality, sense of responsibility, ability to make decisions, and conduct as a subordinate as well as a supervisor, among others. The evaluation form also includes a description of the responsibilities for that particular job, space for additional remarks, and a written record between trainee and supervisor. This performance assessment is unrelated to the report card issued by the school, which students said is not of much value. Grades are given by topic area rather than subject, meaning that one grade is a composite of three different subjects.

Trainees are given written performance evaluations, based on a point system, which describes their strengths and weaknesses. These are discussed with each trainee and kept in personnel files. The bank also maintains contact with *Berufsschule* teachers to solicit suggestions for improvement. Up to now, every trainee accepted by the banks we visited

has been hired after taking the completion examination. The reason behind this is obvious: these individuals know the bank and its operations, they have proven themselves, and they have a sense of loyalty and commitment to their employer. However, one trainer thought this might change because of a recent merger with another bank and the need for fewer employees.

Despite the near certainty of a job offer with the bank in which they train, students and teachers noted there are also some trainees who opt to study at the university or work for another bank in a nearby city at a higher salary rather than accept a position with the bank at the end of their traineeship. In other words, they are not tied to the bank at which they were trained once the traineeship is completed and they have passed their completion examination.

Completion Examination

Preparation for the completion examination, which all students agreed is challenging, consists of reviewing old exams in the various subject areas. One period at the *Berufsschule* per week is devoted to preparation for the completion exam. One bank also provided an in-house review one morning per week to prepare its trainees for the exam.

According to several students, hiring decisions have traditionally been made on the basis of final exam results: those who receive a "3" or better are hired unconditionally, while those candidates who earn a grade lower than a "3" receive a 1-year contract with an option for renewal. Initial hiring depends mostly on the results of the examination rather than other factors, such as whether one has the *Abitur*.

The completion examination consists of a pool of problems that is changed from year to year to reflect changes in laws and the economy. A bank trainer with whom we spoke considered the oral part to be the most important part of the exam because of its practical nature. The examiners include representatives from the employers, an employee representative, and a teacher from the *Berufsschule*.

The final examination is centrally administered every 6 months in Central and South State through a cooperative arrangement. This is one of the few such cooperative academic arrangements that we encountered between these two or any other states. The examination is composed by a committee of employer and teacher representatives. Comparability is guaranteed and the credential is officially recognized throughout Germany.

A completion exam in Central State from several years ago for bank trainees consisted of three main sections: (1) general economics; (2) accounting, information processing, organizational behavior and personnel matters; and (3) banking. The first part, for which 60 minutes were allocated, contained 36 multiple-choice questions dealing with topics such as economic policy, supply and demand, taxation, and contracts. The second part, which students had 90 minutes to complete, also consisted of 36 multiple-choice

questions, many of which dealt with actual situations. The third section was divided into two parts—Part I presented three practical problems to be solved using a mixture of complete sentences and key concepts (90 minutes) and Part II had 26 mostly multiple-choice questions about specific aspects of banking (60 minutes).

Students said that they begin preparing for the completion exam 3 to 4 months before the date of administration. Since many vocational teachers serve on exam committees, they are in a good position to give their students advice and practical tips. Most teachers use old exams for review, which is considered to be a practical approach to preparation. One teacher showed us a compilation of exams for the last 5 years filed by subject. The oral part of the exam might consist of the following: a customer comes to the counter, says his grandfather has died, and that he wants to close out the account. What should be done? What procedures should be followed? Students who pass the examination receive a certificate of proficiency, which is a license to practice the profession for which they have spent the last several years preparing.

General Trends

One of the problems facing the *Berufsschule* and other vocational schools is the decline in the number of trainees and the consequent-shrinking enrollment in vocational schools. An increasing number of students want to study at a university because of the prestige factor, their parents' urging, or both. This trend is especially pronounced in eastern Germany, where the *Gymnasium* is the most desirable type of secondary school.

Another recent problem affecting the dual education system is the reduction in the number of training slots as a result of the slowing economy and corporate mergers.

Summary

Germany's schools fall under the cultural jurisdiction of the 16 individual states, and the cultural agendas in the states vary considerably. In order to establish comparable standards and ensure that certifications are recognized across the country, the Conference of Ministers of Education of all the states (KMK) regularly makes resolutions and regulations, which are agreed upon by all of its members. Beyond the minimum standards set by the KMK, each Ministry of Education creates detailed curricula for all subjects taught in school. The curricula for practical studies in the vocational schools (*Berufsschulen*) are developed by committees, which include representatives from industry, the trades, trade unions, and vocational teachers.

Many differences exist in education policy among the states. Political parties in power generally determine the direction that the education system takes, and conservative states such as Baden-Württemberg generally work to maintain high standards in the schools, while more liberal states such as Nordrhein-Westfalen work towards equal access to education for all students. This difference is expressed in tough entrance

requirements for higher school types in more conservative states and by the support for nontracked alternatives in more liberal states. Some of the more conservative states also have centralized examinations for the *Abitur* and other completion exams. Many teachers and parents expressed approval of centralized examination procedures. Centralized exams were also widely praised for maintaining comparability from one school to the next and for preventing students from being stigmatized by their school's reputation.

The most obvious expressions of education policy at the school level are in textbook selection and in the number of periods allotted to each subject. The state Ministry of Education provides a list of textbooks approved for the schools, and from this the teachers' council within the school makes the final selection of textbooks. Periods allotted to each subject vary by school type and grade in all states and by course of studies in some school types, such as the *Gymnasium* and the *Realschule*.

A pivotal time for students in the German school system is the transition from the *Grundschule* to one of the differentiated lower secondary schools. This takes place after the fourth grade in most states. Despite the option of the *Förderstufe* and the *Gesamtschule* in most states, most teachers and parents felt that if students showed clear promise in the fourth grade, they should transfer to the *Gymnasium* or *Realschule* directly.

In some states, grade averages from the 4th year of *Grundschule* determine recommendation to the higher-level school forms, while in others, they serve as guidelines, and can be weighed with the student's personality and work habits. In the decision on school attendance, teachers make recommendations and parents have the final word. Schools at the lower secondary level, however, can also require students to go to a lower school form if they perform poorly in the first semester of fifth grade.

The three traditional school forms at the secondary level aim to serve the different needs of their students. The *Hauptschule* gives students a more practical, general education, which should prepare them for vocational education after the ninth grade. The *Realschule* gives students a more advanced general education without losing applicability and prepares students for the *Realschule* completion exam (required in some states) and vocational education after the 10th grade. Students with good grades on the *Realschule* completion exam can also attend upper-level *Gymnasium*. The *Gymnasium* gives student a more theoretical, academic education, which prepares them for university study. In addition to the traditional three-tiered school system, some states have a school form created in the 1960's called the *Gesamtschule* (comprehensive school). The *Gesamtschule* only tracks students in some subjects and offers students the opportunity to complete a *Hauptschule*, *Realschule*, or (in some cases) the *Gymnasium* completion exam. Most parents and teachers expressed satisfaction with the traditional three-tiered school system, while the *Gesamtschule* was considered more controversial.

Reform movements in the German school system received mixed reviews from the individuals we interviewed. In one state, teachers said that political changes of power led to upheaval in the education system, confusing teachers and pressuring them to change long-established teaching habits. Nationwide reforms, such as the reform of upper-level *Gymnasium*, have also drawn some criticism, but since the states retain cultural sovereignty, they implement the KMK's recommendations to the extent they deem appropriate.

Most students in *Gymnasien* expressed satisfaction with their education. In contrast, many teachers lamented a decline in student quality in the *Gymnasium* and the *Realschule* since their own youth. Relative enrollment in the two higher school forms, *Gymnasium* and *Realschule*, has been steadily increasing since World War II, as people believe that these two school forms lead to greater vocational and academic opportunities.

Because of budget shortages since unification with East Germany in 1990, those interviewed at all school forms complained of cuts in funding both for school supplies, which are supplied by the locality, and in instruction periods for students, which are funded by the state. Since teachers are civil servants of the state, they cannot legally be fired or demoted, so cutting instructional periods is the only way to save on state-level school budgets. Neither the KMK nor the state ministries have scaled back their standards on course curricula, however, and many teachers complained that the time allotted was no longer enough to cover all the material.

Many teachers also described a changing social landscape in Germany, saying it had a profound effect on both the way that they teach and the material that they can cover in class. In some schools visited, nonnative German speakers comprised over 60 percent of the student body, making weak German skills a major problem for teachers. Both teachers and students also said that parents are increasingly unable or unwilling to help their children with homework, which puts these students at a disadvantage. In higher grades, however, especially in the *Hauptschule*, teachers described immigrant students as harder working and more dedicated than their German counterparts.

Overall, parents, teachers, and students were satisfied with the effectiveness of the German school system. They felt it provided sufficient preparation for either an apprenticeship in the dual system or studies in higher education. Although tracking occurs at an early age, many are aware of the alternative routes to higher education, which can be taken following graduation from a lower school level. Most felt that tracking was appropriate and correct, and that each school type offered an approach and content that was appropriate to its student population.

Chapter 3

Individual Differences and the German Education System

By: Roberta Nerison-Low

"If the child is not suited to the *Gymnasium*, if he cannot learn foreign languages and is not good at abstract thought, then this child will continually fail and will continually experience frustration, and such children are deformed in the development of their personality. They have continual experiences of failure and no successful experience. . . . As a result, we say, do not send children to the *Gymnasium* who are not suited for it. Such children belong as soon as possible in the correct educational path." (*Gymnasium* teacher)

Introduction

Individual differences in ability are overtly acknowledged by all participants in the education system in Germany, and the differentiated education paths in the German education system are a reflection of both the social and political acceptance of differences in individual ability and talent. The strictness in the separation of students into different forms of school emerges from the philosophy that to succeed and progress, a society must have an educated elite and a trained work force and that the educational needs of each group are quite different. The majority of students should receive a practical foundation in education, which leads them to function as productive members of society. However, the best and brightest students must be taught in a disciplined manner, educated in the theoretical underpinnings of key subject areas, taught to think logically, to ask questions, and to work independently in solving problems. These students will then be prepared to study at the university and will emerge from the university ready to move into positions of responsibility in society and eventually to become leaders within German society.

Generally in the more politically conservative states, primarily the southern states, the differentiation between school forms is more rigid and pronounced than in the rest of the country. In the states, which have been influenced in recent decades by the Social Democratic Party, a philosophy promoting a more open system has led to greater flexibility and cooperation between school forms. The traditional division of schools at the lower secondary level remains in these states as well, but the addition of the

Förderstufe and the comprehensive school is a recognition of the need for flexibility within the education system.

In addition to the different political philosophies, which have introduced some change and variation in the education system in Germany, German society and its school system have been affected by increasing cultural diversity. Between 1960 and 1992, the number of foreign students enrolled in German schools grew from 27,800 to 831,900 (Bundesministerium für Bildung und Wissenschaft [BMBW] 1993). Many are the children of first- or second-generation immigrant workers from southern European countries, such as Greece, Italy, and Turkey. However, the breakup of the former Soviet Union has brought many recent immigrants from other countries, such as Poland, Russia, and the former Yugoslavia. As a result of Germany's citizenship requirements, many second-generation immigrants remain foreigners in Germany, and, because of the proximity of their European homelands, immigrants maintain their cultural heritage and language, sometimes through several generations of residency in Germany.

Beyond elementary school are a variety of school forms, which offer education programs of varying length, depth, and emphasis. Individuals who successfully complete one of these programs receive a certificate, which entitles them either to further educational opportunities or to training in a particular job or profession. Whereas tradition formerly played a significant role in an individual's choice of schools at the secondary level, with sons and daughters enrolling in the same educational programs their parents had pursued, parents today are more aware of the opportunities that certificates from the higher level secondary schools provide. As a result, growing percentages of students have been attending the *Gymnasium* and the *Realschule* (the two highest school forms at the secondary level) in recent years and diminishing numbers enrolling in the *Hauptschule*.

Field Research and the Topic of Investigation

We were able to interview teachers, administrators, students, and parents of students in three different states about their views of education practices related to individual differences in ability and their beliefs concerning the efficacy and fairness of their educational system. Since our field study was limited to schools in 3 states, it is impossible to represent the views of individuals from each of the 16 different states. That

our study is, nevertheless, representative of the country is suggested by the fact that despite quite different historical and political influences that have brought philosophical and structural differences to the education systems in these three states, the systems are for the most part very similar.

The focus of our field research was to investigate through interviews and observations the cultural and personal perceptions of individual differences in learning. Prior to the field research we identified four areas of investigation along which we planned to gather information. We were interested in finding out how people perceived individual differences and what they considered to be the basis for these differences. We were also interested in how the system and individuals in the system dealt with individual differences at the structural as well as the classroom level. In addition, we were interested in peoples' attitudes towards the way in which the system accommodated individual differences, such as the use of ability groups, peer tutoring, and academic tracking. Lastly, we were interested in peoples' attitudes towards the education of extremely disabled or extremely gifted students.

At the primary site, Central City, William Foraker conducted all of the interviews and observations pertaining to the topic of differences in ability, except for a few interviews at a vocational high school, which were conducted by a German research assistant. Foraker also collected interview and observation data at the schools in South City, while Ute Milotich and Mark Ashwill collected the interview and observation data relevant to the topic of differences in ability during their visits to the schools in East City. Milotich and Ashwill shared data from the secondary sites with Foraker, and these data were included in the analysis and are reflected in this chapter.

In pursuit of information on how differences in ability are treated in German schools, Foraker and his research colleagues conducted 18 interviews at academic high schools, 14 at vocational high schools, 20 at middle schools, and 25 at elementary schools. Of the total of 77 interviews pertaining to this topic, approximately 25 were held in East City and 8 in South City. In addition, approximately 35 classroom and general observations were included in the data analysis. Printed information obtained from schools, career-counseling centers, state ministries of education and their affiliated research institutes, and the Conference of Ministers of Education was also integrated into research findings in this chapter.

In order to represent clearly the findings from the field research, the topical sections of this paper are presented through a combination of integration of data, summary description, and direct quotations of parents, teachers, and students from each type of school we visited. Therefore the reader will encounter information pertaining to the major school forms, the *Grundschule*, *Hauptschule*, *Realschule*, *Gesamtschule*, *Gymnasium*, and *Berufsschule*, as it relates to each of the major issues we explored. While this may give the appearance of redundancy at times, this approach will familiarize readers with the differences and the similarities which these school forms share and will provide an opportunity for comparison across many different issues related to differences of ability.

Grundschule and Tracking Into Secondary School

Grundschule

German children are required to enter *Grundschule* at the age of six for the first 4 years of their education. The *Grundschule* provides, within a nurturing atmosphere, the educational and social foundation for children in Germany. In contrast to the education system at the higher-grade levels, the *Grundschule* is a highly egalitarian institution. There is no tracking of children or grouping by level of ability within classes. The school's goal is to foster each child's full potential. *Grundschule* teachers believe that it is their responsibility to bring the weaker children along and to help them keep up, while fostering learning for all children in the class. Teachers set aside time for helping weak students both during class and after school.

In order to promote class cohesiveness and bonding between students and teachers, *Grundschule* teachers often teach the same group of students for more than 1 year, and many teachers and principals noted that schools try to keep a teacher with the same class from the first grade through the fourth grade. Teachers said that this practice also increases their ability to assess each student's academic progress and provide ongoing individual support.

Children may be held back a year if their teacher determines that the weaknesses they display would only worsen if they were promoted with their classmates. However, retention is not practiced, as frequently these days as it was in the past and a teacher's decision to retain a student often must be approved by a school authority. Despite the increasing reluctance to retain students at the elementary levels, we found that there is little stigma attached to retention. Instead, it is viewed as an important method of fostering development and is done with the child's best interests in mind. Although there is some movement towards integration of children with disabilities, most are referred to one of a number of special schools called *Sonderschulen* and do not attend *Grundschule*.

Teachers at the various *Grundschulen* we visited shared the philosophy that school should be a pleasant experience for children. They said it is important to make school enjoyable as well as educational, and that they try to develop good relationships with the children in their class. One example of the incorporation of this philosophy into the classroom was observed in a third-grade class where the teacher began each day by having the entire class play a short musical piece together on their recorders. Teachers also noted that learning games are included in classroom exercises in order to engage students and maintain their interest. Although they suggested that this is particularly

common in the first 2 years of *Grundschule*, we observed a third-grade mathematics exercise that also involved the entire class in game-like oral problem solving, with students earning turns at creating the problems after they supplied the correct answer to the previous problem.

Grundschule teachers also see themselves as role models for social behavior. They claimed that instruction in acceptable social behavior is an important component of children's' educational experience at the *Grundschule*. Many teachers reported using small group work and peer tutoring as integral parts of classroom instruction to promote socialization and to facilitate learning, and they actively encouraged children to help one another. In addition, several teachers spoke of how they often had frank discussions with their class about differences in the cultural backgrounds of the children in the class, about how people have different strengths and weaknesses, or about aggressive or inappropriate behavior, which was disruptive to the class. Teaching responsibility was also stated as an important goal, and teachers assigned classroom duties such as watering plants or passing out milk bottles at snack time to promote responsibility.

Students are introduced to the concept of grades as indicators of performance in the second and third grade, so that they are accustomed to receiving grades by the time they enter the fourth grade. Teachers also change the tone of the class in the fourth grade; they begin to make the lessons more academic in nature and they incorporate fewer learning games as they try to prepare the fourth-grade students for their move to a lower secondary school. In a sense, they are weaning them from the relaxed and nurturing atmosphere of the *Grundschule*.

At the end of the fourth grade, children transfer from the *Grundschule* to one of several lower secondary school forms. (In Berlin and Brandenburg, the transfer takes place following the sixth grade.) The student's fourth-grade teacher recommends one of the lower secondary school forms. However, the final decision rests with the child's parents.

Factors in the Tracking Decision

The primary factor, which influences tracking to the secondary level, is a student's academic performance in the fourth grade. The German grading scale goes from 1 (A) to 6 (F). Some states require a certain grade average for transfer to the higher level schools, but others do not set a minimum grade requirement. In two of the three states in our study, students achieving at least an average of 2.5 were recommended for transfer to either the *Gymnasium* or the *Realschule*, although students with lower averages could attend either of these schools on a probationary basis at their parents request. In the third state, students were required to achieve at least an average of 2.3 to attend the *Gymnasium*. In some states, students whose grades are not within the recommended parameters for transfer to the *Gymnasium* or the *Realschule* must take an entrance examination designed and administered by the school they wish to attend. If they pass the examination they may enroll for a probationary period, and if they demonstrate they are capable of performing at the required level, they remain in the school. Within

the traditional German school system, students who do not achieve the required (or recommended) grade average or obtain a sufficiently high score to be admitted to the *Realschule* or the *Gymnasium* enter the *Hauptschule*. In states where the *Gesamtschule* exists (otherwise known as a comprehensive school form), students of all level of abilities may choose to attend the *Gesamtschule* as an alternative to one of the traditional school forms.

The system is designed to separate students primarily on the basis of their prior academic performance. However, because decisions about tracking are so important to the child's academic and vocational future, we asked parents and teachers to describe the factors which they consider as they make this decision, how they view the decision process, and whether students play an active role in the decision process.

Many parents stated that they felt that it was difficult to make the decision about the appropriate school form in which they should enroll their child. Throughout our discussions with parents and teachers it was evident that parents relied heavily on the recommendation of their child's teacher, and in most cases did not believe they should make the decision without first hearing the recommendation from the teacher. Parents felt that while they might know what grades their child was getting in school, there were other considerations in the decision which only the teacher could fully evaluate. They had confidence in the teacher's ability to assess their child's academic capabilities and personality characteristics affecting academic performance, and teachers confirmed that they took personality into consideration when making a recommendation for tracking to a secondary level school. Two characteristics in particular—self-confidence and the ability to work independently—were often mentioned as important factors in their recommendation.

Despite the high value that was generally placed on the teacher's recommendation, many parents and teachers mentioned that an increasing number of parents are choosing to go against the teacher's recommendation. Respondents said that in most cases this was because parents want their child to attend either a *Realschule* or a *Gymnasium*. Successful completion of these school forms entitles the student to more educational opportunities leading to higher status and higher wage occupations. Parents are very aware of the occupational and educational limitations associated with the *Hauptschule*, and they stated that the increasing competitiveness in the labor market in Germany has led to a devaluation of the *Realschule* education as well. They did not want to limit the opportunities that might be available to their child in the future, so they had to consider carefully what entitlements each particular school form provided upon its completion.

A few parents said that they would discuss the tracking decision with their children, but children were not usually expected to have an opinion about the school form to which they should go. This was confirmed by the fourth-grade students. They were aware that they would be changing schools for their next academic year but did not seem to know that grades were of primary importance to the decision. They knew that both their parents and teacher would be involved in the decision, but they were not concerned with the decision themselves. Typical student responses about the tracking decision

included statements such as, "I do not know yet where I will go. My parents decide." Another student said, "We have no fixed opinion where we should go." The students' lack of awareness of the importance of their grades in the 4th year is perhaps a reflection of the stressless environment which both parents and teachers believe should exist at the *Grundschule*. Students who voiced concerns with the tracking decision focused their concerns on other things. For example, one student said, "I resent that I have to say goodbye to some students." Another said, "There are too many different schools, and the class sizes are bigger in secondary schools than they are here."

Parents said that many factors complicated the decision about which secondary school form they should choose for their child, but first and foremost they felt that the school form should be appropriate for their child's personality and ability. One *Grundschule* parent spoke about the factors pertinent to her decision:

> We have a comprehensive school with a *Förderstufe* in our city. This school and ours closely cooperate. The *Förderstufe* has the advantage of deferring the decision of where to send the child. Only after sixth grade is the decision made. In a community that is further away from us there is a *Gymnasium*. It is also not sure whether they will have a commuter bus. This depends on how many children from here will go there. The *Gymnasium* is very old, and it also has old fashioned, fossilized teachers. The school is not as open as our school here, and I probably would have qualms about sending my child there. For the children of this school here, this *Gymnasium* would be like a stroke with a hammer. So I would rather say now that my daughter will go to the *Förderstufe*.

Many parents stated that they believed the tracking decision was made too early and that it would be better for "late bloomers" if it were deferred until the end of the sixth grade. This was a greater concern for parents who lived in states which did not offer the *Gesamtschule* as an alternative to the traditional school forms. Parents in the former East German State were even more vocal about their unease with making this decision than parents we spoke to in central or southern Germany. The poor reputation of the combined *Haupt/Realschule*, which was the only alternative to the *Gymnasium* in this state, contributed to the difficulty of this decision. One parent also specifically complained that the comprehensive school form was not an option in their state. In fact, many parents and teachers in the former East German state said that fourth grade was too early to make such an important decision. The complexity of the decision in this former East German State was summed up well by one parent who said:

> I do not like the new school system at all. It is too early to decide in fourth grade which schools the child will attend. In addition, parents have to decide to what kind of Gymnasium they will send their children. The kind of Gymnasium also determines which subject's students can study

> after finishing the *Abitur*. Parents do not feel competent to make all these important decisions for their children at such an early age. I think that it is very hard to know what talents and inclinations children will develop later in life.

The location of a school and its reputation were also often important factors in the decision. Within urban areas there was often a myriad of choices among *Gymnasien*, and parents and students recognized that some *Gymnasien* had better reputations than others. In particular, the *Gymnasien* which offered Latin and Greek were usually considered to be more difficult and therefore were more prestigious, although *Gymnasien* offering modern languages were also among those with very good reputations. Still other *Gymnasien* were particularly noted for their science or their music programs. On the other hand, in rural communities the choices were much more limited, and if there is a local *Realschule* with a good reputation, parents may decide to send their child there rather than to a *Gymnasium* in a neighboring town.

To assist parents with their choice of a secondary school, *Grundschulen* sponsor information sessions each spring at which principals from different lower secondary schools present information about their school to the parents of fourth-grade students.

Secondary School Tracks

The philosophy which guides education at the lower secondary level is based on the belief that students should be fostered within an environment which has been determined to be appropriate for them. Therefore, the different lower secondary school forms are administered with distinct social and education goals, and students are channeled into each of these school forms according to their ability to meet the required academic standard. If students "fit" the school form and are motivated to learn, then they will meet the school's standards. If the fit is not appropriate, both parents and teachers believe that the student will suffer needlessly and the consequences could be detrimental to the student's personality formation and later prospects for employment.

Hauptschule. The lowest achieving students attend the *Hauptschule*, where they receive slower paced and more basic instruction in the same primary academic subjects taught at the *Realschule* and *Gymnasium*. Additional subjects at the *Hauptschule* have a vocational orientation, and students are offered career preparation guidance focusing on vocational choices.

In most states, students enroll in the *Hauptschule* beginning in the fifth grade and remain through the ninth grade. However, some states require school attendance through the 10th grade, and in Bavaria all students who do not enroll in the *Gymnasium* for the 5th grade are sent to the *Hauptschule* for a minimum of 2 years. The students deemed to be capable of attending a *Realschule* are then transferred from the *Hauptschule* to the *Realschule* at the beginning of the seventh grade. Those who do not meet the *Realschule*

requirements remain at the *Hauptschule* through the ninth grade. The Bavarian system is currently changing, however, and within a couple of years it is likely that all students leaving the *Grundschule* will be tracked at the fifth grade into either the *Hauptschule*, *Realschule*, or the *Gymnasium*.

After successfully completing the ninth grade at the *Hauptschule* and receiving the *Hauptschule* certificate, most students enter either a full-time vocational program or a part-time vocational program combined with further study. These programs generally last 2 to 3 years and provide their students with extensive training and a certified skill.

Realschule. The *Realschule* provides students with an education which combines both liberal and practical education from the 5th through the 10th grade, but the emphasis is on the liberal education. The educational focus in the *Realschule* is differentiated between the *Unterstufe* (lower level), which incorporates the 6th and 7th grades, and the *Oberstufe* (upper level), which includes the 8th, 9th, and 10th grades. The lower level has a strong pedagogical emphasis, while the upper level is more closely oriented to various disciplines. A student who has a grade point average sufficient for attendance at the *Gymnasium* may be referred to the *Realschule* instead, if the student's teacher believes the less competitive environment of the *Realschule* would better suit the student. Students who complete the *Realschule* and receive the *Realschule* certificate are eligible to continue their studies by transferring to a *Gymnasium* or one of the upper-level vocational school forms—the *Berufsfachschule*, the *Berufsaufbauschule*, the *Fachoberschule*, the *Berufliches Gymnasium*, the *Fachgymnasium*, or the *Fachschule*.

In some municipalities, the *Hauptschule* and *Realschule* occupy the same building and share administrative personnel and teachers. The *Hauptschule* and *Realschule* students, however, may have little contact with each other, remaining in separate curricular tracks. However in some combined *Haupt/Realschulen*, the students are integrated for some subjects and divided into separate classes for the primary subjects. In the former East German states the combined *Hauptschule* and *Realschule* has various titles: *Sekundarschule*, *Mittelschule*, or *Regelschule*, depending on the state. Although students enter the combined *Haupt/Realschule* in the fifth grade, the fifth and sixth grades are untracked, so that students do not enter either the *Hauptschule* track or the *Realschule* track until the seventh grade.

Gymnasium. The *Gymnasium* provides students with a liberal education, and traditionally leads to study at the university. Students may enroll in the *Gymnasium* at the lower secondary level (5th grade) or may transfer to the *Gymnasium* after the completion of the *Realschule* (11th grade). In some states, it is also common for students to transfer to the *Gymnasium* following the sixth grade. The final 3 years of *Gymnasium* (grades 11–13 in most states) are called the *Oberstufe*.

Gymnasien can choose to specialize their instruction at the lower secondary level by providing course offerings in one or more education tracks. The most common education tracks offered by standard *Gymnasium* include classical language, modern

language, and mathematics-natural sciences. Students who successfully complete the *Gymnasium* and pass comprehensive examinations receive the *Abitur*, which entitles them to study at a university or any upper-level vocational school.

Gesamtschule. The integrated *Gesamtschule* is not found in all states. Unlike the traditional secondary school forms, it includes students of all levels of ability under one roof. The first 2 years of the *Gesamtschule*, the fifth and sixth grades, are called the *Förderstufe*. The *Förderstufe* is considered to be a period of orientation for students, and very little differentiation by ability takes place during these first 2 years. Students are not placed into differentiated classes at all at the fifth-grade level, and in the sixth grade differentiation is limited to a basic-level course and a more advanced-level course in two subjects, mathematics and English. However, in the seventh grade and eighth grade, students take most of their subjects at either the basic or advanced level, and in the ninth-grade, students enter a three-tiered system of advanced- and basic-level courses in the main subjects. This system is designed to allow students to take courses appropriate to their level of ability in each subject. For instance, a student who is strong in mathematics would be placed in either an A- or B-level mathematics course. The same student, if weak in German, would be placed in a C-level German course. There is also movement between levels as a student's performance improves or declines.

Most *Gesamtschule* students pursue their studies through grades 9 or 10, receiving either the *Hauptschule* certificate or *Realschule* certificate. These students are entitled to pursue the same education or vocation programs as those receiving their certificates from the traditional *Hauptschule* or *Realschule*. Students who take and successfully complete advanced-level courses through the 10th grade at the *Gesamtschule*, including at least two foreign languages, are entitled to study for the *Abitur* at a *Gymnasium*. Some *Gesamtschulen* include an *Oberstufe* (grades 11–13), which leads to the *Abitur* and is essentially identical to the *Oberstufe* in a traditional *Gymnasium*.

It is important to note that while all of the secondary school forms are distinct, movement between forms is a possibility. There is also some flexibility in when students can move from one form to another. The system provides more flexibility than first appears possible.

Perceived Sources of Differences in Ability and the Range of Differences Within the Classrooms

We were interested in finding out not only how individuals of differing abilities were educated within the German school system, but also where these differences in ability among individuals were thought to originate. What were the sources of these differences? Were they considered to be inborn and immutable, were they a result of

environment, or were they thought of as a product of both innate intelligence and environment? Also, given the fact that Germany has a differentiated school system, we were interested in the range of ability differences within classes at the different school forms.

Respondents answered most questions regarding differences in ability from the perspective of the school form in which they either taught, studied, or had a child studying. Because the differentiated nature of the school system results in greater homogeneity within school forms than across school forms, it is important to look at not only what the respondents said but also at the student population that formed their frame of reference.

Across all school forms, the primary sources of ability were cited as innate intelligence and family support. However, in the lives of foreign students in particular, environmental factors besides family support were often raised as very significant influences on ability. Respondents noted these environmental factors very frequently for student populations at the *Grundschule* and the *Hauptschule* schools, where the highest percentages of foreign students are found.

Teachers' Views

Grundschule. *Grundschule* teachers commonly cited a longer list of factors, which they saw as influencing differences in ability than did teachers at the higher school forms. The students enrolled in *Grundschule* classes were more heterogeneous than those in classes at the secondary level, and the *Grundschule* teachers were frank in describing the wide range of differences in performance encountered in their classrooms. Typical responses included such as statements, "The range of performance levels in my class is tremendous." Another said, "I have very, very gifted children in my class, and I have students who are not at all intelligent." They also pointed out that the children in their classes often came from families of different socioeconomic and cultural backgrounds. It was not uncommon for *Grundschule* classes to include at least 25 percent foreign students, and in one of the schools we visited the percentage was much higher. Language fluency (for recent immigrants) and vocabulary issues (for first- and second-generation immigrants) were often cited as factors in these children lives. Teachers also recognized that academically weak children may not have been to kindergarten and did not have well developed social skills. Thus these children start school on unequal ground. A *Grundschule* teacher from one of the schools in a poorer area of one city stated, "At our school we have a tendency towards weaker students. One third of my class may be considered very poor. They are in need of devotion; the teacher has to make sure not to let the deficits grow."

However extensive the list of contributing factors, the primary factors cited repeatedly by *Grundschule* teachers as contributing to differences in ability included natural disposition (often referred to as intelligence or talent), family support, and family environment. Included in family environment were factors such as whether the children were latchkey children, whether there was adequate room in the home for a quiet study

space for the child, whether German was spoken in the home, whether parents encouraged reading, or whether the children were primarily left alone, unsupervised, and spent a great deal of time watching television. One teacher's statement summarized briefly the critical factors cited by many of the teachers we met:

> The aptitude of the child is definitely very important. The family must be another factor. The entire domestic environment with the question of how much the parents care about their children and school is an important factor.

Another *Grundschule* teacher elaborated on the role of home environment and family support as follows:

> Some students are helped and encouraged at home. They have an easier time at school. Other students do not have contact with people who want to further the development of their mind. For them, the situation at school is always rather new. They need more time, and they only learn at school. So it is not just a matter of intelligence. It is one factor, but other factors blend with it.

Most *Grundschule* teachers also mentioned a group of secondary factors, which they felt contributed to differences in ability among children. The most frequently cited of these were concentration, willingness to learn, and effort.

In our discussions with *Grundschule* teachers about the range of ability differences they found in their classrooms, they often spoke of their efforts to reduce the range. One *Grundschule* teacher in particular stated, "The teaching staff tries not to have the differences between students grow too much. We adjust our teaching so that these differences can be avoided." This statement was consistent with other teachers' statements about how they try to foster all children and bring the weak children along with the rest of the class.

Secondary schools. Teachers at the *Hauptschule* and the *Realschule* also said that several factors contribute to a student's ability and level of performance in school. Like *Grundschule* teachers, both *Hauptschule* and *Realschule* teachers cited family support and innate intelligence as two of the most important factors. In addition, the amount of interest a student has in school, their level of interest in a particular subject, and their willingness to put forth effort were all cited as important contributors.

At the *Gymnasium*, teachers were more likely to speak of innate intelligence, the student's interest in the material, and their motivation to learn as factors, which play a large role in their level of ability and academic performance. The most academically able students attend *Gymnasium*, but teachers noted that those who were a little less talented

but willing to work hard could also perform well in the *Gymnasium* and pass the *Abitur*. One *Gymnasium* teacher stated the following when asked what the most important reasons were for different levels of performance among the students at the *Gymnasium*:

> First of all there are different preconditions in terms of inherent talent. Then there are different work styles. Some students are able to work in a concentrated way. A third point is the question of motivation. Students who have a certain amount of enthusiasm about the material have an easier time performing well.

Despite the fact that students must meet certain criteria for their performance to enroll in the *Gymnasium* or the *Realschule*, teachers and parents alike spoke of the increasing numbers of students being sent to these school forms against the recommendation of their teacher. This was generally said to add to the diversity in the range of performance at both of these school forms. In the former East German state, however, teachers and parents complained that because of the low reputation of the combined *Haupt/Realschule*, far too many students who were suited to the *Realschule* track were enrolling in the *Gymnasium* instead, and that this was creating a greater range in the level of ability at the *Gymnasium* while reducing the range in the combined *Haupt/Realschule*.

Gymnasium teachers often pointed out that the weakest students would eventually transfer to a less demanding school form. As a result, while the early grades in the *Gymnasium* have great diversity in the students' levels of ability, the grades become somewhat more homogeneous as students who are unable to perform at the required level transfer to another school form. The percentage of students who transfer to a less demanding school form, such as the *Realschule* or combined *Haupt/Realschule*, varies among the states, however, with the more academically rigorous states in southern Germany having the largest percentage of students leaving the *Gymnasium*. One *Gymnasium* teacher noted that in the southern state in which he taught, approximately 60 percent of those students who began their studies in the *Gymnasium* would achieve the *Abitur*. The rest would either transfer to the *Realschule* or take a school-leaving exam at the end of the 10th grade of the *Gymnasium*.

When *Realschule* teachers were asked whether there were big differences in performance within their classes, teachers noted that this was indeed the case. They said that their school often encompassed the full range, because in addition to the former *Gymnasium* students and the typical *Realschule* students, they also had students whose abilities more closely matched the requirements of the *Hauptschule*. They also said that the differences in the level of the standards between the school forms meant that the former *Gymnasium* students were among the academically stronger students in their classes. This was confirmed by some of the transfer students with whom we spoke. They said that they found the classes at the *Realschule* easy and that in some cases they had already studied the material at the *Gymnasium*, which they were now covering in the *Realschule*.

Hauptschule teachers acknowledged that they had many weak students and said that some students who could not perform at the *Hauptschule* level were eventually transferred to a *Sonderschule*. On the other hand, teachers at the *Hauptschulen* pointed out that they had the highest percentage of foreign students and that the reason many of them were in the *Hauptschule* was that they did not have strong German language skills and were therefore unable to perform well in school. They also noted that they had students who were able to perform very well in some subjects.

Berufsschule. The *Berufsschule* is a part-time vocational secondary school in which students enroll following completion of the *Hauptschule*, *Realschule*, or *Gymnasium*. As a result, many *Berufsschule* teachers cited diversity in education background and age differences as factors influencing student performance at the *Berufsschule*. One teacher stated it this way:

> It is certainly the case that some have better preparation than others, and those with better preparation have an easier time of it. And one can see that students with higher certificates work in a more concentrated way.

Intelligence was considered a primary factor in the ability to achieve at the *Berufsschule*, and this was often gauged by the student's school-leaving certificate from a secondary school. Other factors influencing performance at the *Berufsschule* mentioned by *Berufsschule* teachers included career motivation, parental support, and home environment.

Parents' Views

In regard to the sources of differences of ability in children, one parent's response encapsulated most of the factors typically mentioned by most parents.

> The intelligence of the children is one important factor. A second point would be how the teachers approach the children. That depends greatly on the size of the classes. The bigger the class the more problems children will have—especially the weaker ones. A third point would refer to how much the parents deal with the children at home and whether they are willing to work with their children on the class material.

The importance this parent placed on the role of the teacher was also cited by the other parents of *Grundschule* students. It was not cited as a factor at the other school forms.

Many of the *Realschule* and *Gymnasium* parents we spoke to said that they no longer were able to help their children with their schoolwork and that they expected their children to take responsibility for doing their homework on their own. Nevertheless, *Realschule* and *Gymnasium* parents saw the influence of the family and the family as a source of support as important factors in student performance. Over and over again,

parents cited parental support as an important factor. One *Realschule* parent said, "I think it has a lot to do with parental support. . . .parents are often both working and I think that it is necessary for the parents to exert some pressure in order that the kids do something." Another stated:

> There is the intellectual level, but this does not only have to do with talent. There are some kids who could do better, but who are not challenged to do their best because the parents are too busy working. The children must be encouraged.

Parents of *Gymnasium* students gave similar answers. Typical responses were very much like the one of this parent: "Students may have different aptitudes, but the different support for the student is far more essential."

Students' Views

Grundschule students were very much aware of differences in ability and spoke of them frankly. A comment made time and again by *Grundschule* students was that not everyone can be good in all subjects. They stated that most students are strong in some areas and weak in others and this was normal. In addition, *Grundschule* students we spoke to noted that some students are always attentive and participate and learn a lot while others are inattentive and disruptive. One astute *Grundschule* student noted that to do well in school "a student must be talented and able to learn material fast." In addition, "he/she should participate in class and not contradict or disturb the teacher." Talent, attentiveness, and participation were key factors that they saw as contributing to good performance.

Students often described the range of differences in ability in terms of grades. One student stated, "The grades on the exams reflect the level." The best students were those few students who consistently received the grades of 1 (A) and 2 (B). Most perceived the majority of their classmates as performing somewhere in the middle range. A *Gymnasium* student spoke of the distribution in his class by saying:

> We have one student who always gets 1's and 2's, and we have some who are slightly below average—including me—and occasionally get 4's and 5's. We also have students who constantly get bad grades. And then there are of course those who are sometimes good and sometimes bad.

Most of the students we spoke with were not concerned with school pressure. We realize, of course, that the students we talked with were usually average or above average students, so their views on the pressure they felt may be somewhat atypical. They said that, although there was some pressure to perform well, it was not overwhelming. They recognized that standards and the pressure to perform at a high level varied by school form and behind that for the average student at each school form the pressure would not be too great if he or she paid attention in class, kept up with the school work, and were motivated to learn. However, they noted there was always more pressure for the

weakest students and that students who were stressed by the demands of school (usually at the *Gymnasium*) would often transfer to a less demanding school form. Typically, students who were not weak in all subjects but had difficulty with a particular topic would seek extra help from the teacher or hire a tutor.

Although students at the *Realschule* and the *Gymnasium* recognized that placement in these schools required a certain amount of intelligence, they also noted that most people would not be good in all subjects and that additional factors such as effort and motivation contributed to differences in performance. For example, one *Realschule* student spoke of "laziness, lack of interest, and lack of intelligence" as reasons why some students do not learn. A student at the *Gesamtschule* said, "Those that do not want to learn and do not like to go to school or do not put in any effort will always stay in *Grundkursen*" (the lowest-level-of-ability class within the three-tiered class system at the *Gesamtschule*). At the *Gymnasium*, a student stated that:

> First of all there is the difference in innate intelligence. Then there is the amount of effort one puts in. It may be the case that students who are not so intelligent are able to pass without a problem. They have to work a lot, but this happens too.

In addition to stressing that intelligence and effort were important, several of the students we spoke to also referred to home environment and a lack of support at school as important influences on performance.

Overall, there was a great deal of consensus among parents, teachers, and students regarding influences on a student's level of ability and performance in school. Respondents at all of the school forms cited innate intelligence and family support as the key influences. Home environment, effort, motivation, and a willingness to learn were also considered important influences for students at all school forms.

The Influence of School Form on the Instructional Environment

Instruction and Instructional Support

The highly differentiated school forms which exist at the secondary level are designed to educate students who have been tracked into particular school types for education's which vary in their emphasis on liberal versus practical education. Not surprisingly, then, teachers and administrators agreed that their approach to teaching, their relationship with their students, and the level of the material presented in class are determined to a large degree by the school form in which they teach. Because of the differences in the level of ability between populations at these schools, we asked about

the perceived needs of the students at the different schools, the types of support schools and teachers provided to students who had difficulty meeting the standards at each of these schools, and the sources of support which were available to students outside of the school, through either community or private services.

Hauptschule. Although the *Hauptschule* is considered to be the easiest secondary school form, teachers at the *Hauptschulen* we visited frequently said that for many students at the *Hauptschule* school was not easy and the students' home environments were often not supportive of learning or school. As a result, *Hauptschule* teachers believed that to encourage student motivation to learn it was important for them to establish good relationships with their students. One teacher put it this way:

> Many of the students are in very difficult situations. Here the main thing is to build a relationship with the student. Because if the students notice that someone cares about how they are doing, then they become willing to learn. A closer contact develops, and they come to class and are willing to listen.

Teachers at the *Hauptschulen* also saw it as their responsibility to approach students having difficulty with the material and offer assistance. They made themselves available after class for students with questions and they frequently used group work and peer tutoring in their instruction in the classroom. Teachers often noted the value of having a stronger student help a weaker student on in-class exercises.

New material was always presented in class, and teachers said that to keep their students interested in the lesson, it was important to present the material in an engaging way. Teachers also spoke of the necessity of presenting the same material in many different ways to accommodate the differences in the ways students learn. Visualization and hands-on activities were often incorporated into the lesson to reinforce the material, which was also presented orally. One teacher described her efforts this way:

> It is difficult to get all the kids to understand. So I try three or four different ways of explaining. I try to formulate the explanation differently. First I try to explain it intellectually. Then I try to explain it in a more practical, hands-on fashion. With the weaker students, I try to show them, to get them to visualize and experiment. I repeat the steps to solving a problem one by one.

Teachers noted that in-class exercises and homework were a repetition of the material covered in class and that they were used to reinforce learning.

Teachers also said that they saw the need to accommodate the stronger students and that they had strategies for keeping them engaged. They often gave these students extra in-class tasks to work on while the others were finishing up the required assignment. They

might also ask one of the stronger students to look up additional information in the library or in newspapers and present it in class. These higher achieving students often continue on for their 10th year of school and attain the *Realschule* certificate.

Hauptschule teachers also mentioned the many disciplinary problems they encountered in the school. One teacher explained that many of these children are accustomed to doing what they want at home, since many come from families where both parents work and they are unsupervised after school. She therefore saw the school as having to take over in some ways for parents. Another teacher spoke of the expanded role of the school for *Hauptschule* students:

> What I can say for certain is that the students, no matter what situation they are in, feel comfortable and well at school. One sees this in the way the students sit at school even, when they do not have any class. They do not want to go home. They feel a bit protected and they can always find someone with whom they can talk, and if one of the teachers walks through the recess hall, then they can talk with us. It is for them a good part home.

In sharp contrast to teachers at the *Gymnasien*, who focused on academic instruction, several teachers at the *Hauptschulen* described their jobs as including a social work function in addition to subject matter instruction. A particularly clear example of this was given in this statement by a *Hauptschule* teacher:

> The students learn by emulating the teacher, so the teacher has to set a good example. If I treat the students with respect and propriety, they may learn to treat one another in this way. This is important, so that they can see there are other ways of behaving. They do not get this at home or from their surroundings. If there is a problem with a particular student, then I take him aside and try to listen and understand what the problem is. One influences children not by force, but by means of a trusting relationship that one builds up with them.

Support courses offered by the school were usually limited to *Förderkurse* (classes offering additional help) in the main subjects of mathematics and German, and the existence of these classes at a particular school was dependent on the availability of extra funding. A homework assistance program was sometimes offered at the school or a nearby community center; however, these programs were organized and supported by the city or by local churches. Both the support courses and homework assistance were offered in the afternoons for a few hours each week. The teachers we spoke with said that they encouraged their weak students to attend the support courses and homework assistance; however, some teachers stated that few students took advantage of the support courses.

Realschule. The course offerings at the *Realschule* have a more academic orientation than those in the *Hauptschule*, and the subject matter is presented in much greater depth. *Realschulen* teachers said they expect to challenge the students and hold them to a higher standard than is possible at the *Hauptschulen*. In addition, they expect students to be more motivated and to take the initiative to learn and study the subject material.

Despite the academic orientation at the *Realschulen*, relationships between students and teachers were less formal than they were at the *Gymnasien*. Like *Hauptschulen* teachers, *Realschulen* teachers said it was important to be available for students who had questions. They approached students who had difficulty with the material and provided them with assistance or suggested tutoring. Many teachers also said they encouraged peer tutoring by allowing students to work on their in-class exercises in pairs and in small groups.

As at the *Hauptschulen*, opportunities for assistance outside of class were available at some of the *Realschulen* in the form of support courses. These after-school classes were offered in the main subjects and attendance was voluntary. Teachers and students said that *Realschule* students who needed extra assistance in a particular subject frequently hired private tutors.

In general, it was evident from the *Realschulen* teachers that they saw their role as more than just an academic lecturer. They felt that building good student-teacher relationships was important, and they made themselves available to students. One teacher, articulated well how he saw his role and that of the school: "I do not think that the sole function of school is just to teach subject material; it is also to help students in their transition from youth to adulthood."

Gesamtschule. A relatively small number of students in Germany are actually enrolled in *Gesamtschulen*. Statistics from 1991 showed approximately 9 percent (Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland [KMK] 1993). The more traditionally conservative states have not added the *Gesamtschule* option, and even in the states which have added the *Gesamtschule*, opinions about the viability of this school form vary widely.

Gesamtschulen primarily enroll students who would have entered the *Hauptschule* or the *Realschule* and combine them in one building. In some schools, students suited to a *Gymnasium* may also attend the *Gesamtschule*. As a result, the full range of students in terms of level of academic ability can exist within the *Gesamtschule*.

In their first year at the *Gesamtschule*, students remain together in a "class" and receive the same instruction in the same subjects. This deferral of differentiation allows students who need additional fostering to receive it with their peers and to continue to benefit from the help provided by stronger classmates. Beginning in the sixth grade, a limited number of subjects are taught at different levels of difficulty. From the eighth grade onwards students are placed into most of their courses on the basis of their grades in prior years. The decisions about placement are based on each student's strength or

weakness in particular subjects. This system allows students to receive instruction in the primary subjects that is geared to their level of ability without tracking them entirely into advanced-level, mid-level, or low-level classes, as is done in the traditional school forms. Also, as a student's level of ability improves (or declines), they are placed in a course at the appropriate level. Parents can contest decisions about placement in courses if they do not agree with them. However, when parents request their child be placed in a more difficult level course, the move is made on a probationary basis.

Primary subject teachers instruct fairly homogeneous classes. The teachers we spoke with indicated that they used peer tutoring, believed that teaching through hands-on discovery was important to retaining students' interest, and that they were responsible for teaching more than academic knowledge in many ways. Like the teachers in the *Hauptschulen* and *Realschulen*, teachers in the *Gesamtschule* which we visited made themselves available to students who had questions and stressed that their role of teacher had expanded to include educating and assisting students who do not receive much attention at home.

The *Gesamtschule* offered a course providing assistance with homework once a week, but one of the teachers we spoke to felt that it was really not adequate, since it was taught by only one teacher, who was responsible for helping students across all subjects. Recent reforms, however, had led to the addition of a special course in German as a second language, which entailed 6 hours of additional instruction per week for foreign students with weak German language skills. In addition, two school social workers and a part-time school psychologist had recently been added to the school's staff.

Gymnasium. Traditionally, students deemed to possess the highest scholarly ability attend a *Gymnasium*. Although courses at the *Gymnasium* are demanding from the earliest grade levels, most students said that the courses become even more difficult during their last 2 years. Throughout grades 12 and 13, students are required to take two advanced-level courses, called *Leistungskurse*, in addition to their regular courses. *Leistungskurse* offer much more concentrated and indepth study of the subject matter.

Teachers cited essential student characteristics for success at the *Gymnasium* as the ability to absorb material quickly, think logically, and work independently. Instruction relies primarily on lectures by the teachers, but in some subjects may also include discussions and student presentations. Teachers expect students to take the initiative in asking for help when they have difficulty understanding the material. They expect students to apply themselves and to seek outside tutoring if necessary (in language classes this was seen as especially acceptable). Peer tutoring and group work were not common means of instruction in the *Gymnasium*, although teachers thought it was acceptable for students to study together after school and ask each other for help if they did not understand something.

Generally, teachers did not propose that it was their duty to rescue students in academic difficulty. Academic problems, in their view, usually arose from lack of work rather than lack of aptitude, and students who were unwilling to work should go to an easier

school form. Teachers also stated that there were often a few students who attended the *Gymnasium* because of parental expectations who were not able to meet the required level of performance. No school support was available to these students beyond what an individual teacher might be willing to do to assist them. Several teachers voiced the opinion that these inappropriately placed students slowed the progress of the rest of the class, and they recommended that these students transfer to a school that was appropriate for their level of ability.

The only out-of-school support services that *Gymnasium* students commonly availed themselves of was private tutoring. Although students and parents all recognized that tutoring may be necessary on occasion for particular subjects, parents in particular stated that if it was necessary for a student to use tutors frequently in the lower grades of the *Gymnasium*, then it would be better if the student transferred to a less demanding school form. Parents and teachers often stated that the stress of always being close to failing would not be good for the student, and it would be better if the student had a chance to experience success in learning.

Berufsschule and Berufliches Gymnasium. Berufsschulen are part of the dual education system available at the secondary level. They offer a variety of programs, which combine study with an apprenticeship over a period of 2 to 3 years. Students generally spend 3 1/2 days each week on the job at their apprenticeship and a day and a half in class at the *Berufsschule*.

According to *Berufsschulen* teachers, students who enter their courses with higher-level secondary school certificates generally have less difficulty with the course work than those entering with *Hauptschule* certificates. However, teachers felt that weak students could be successful if they put in the effort. Most teachers said that they would make themselves available to assist students who had questions and that they would often spend extra time in the classroom going over the exercise worksheets with the weaker students, while the others worked independently. Teachers at the *Berufsschulen* also said they had their students work in mixed-ability groups, because they believed this was helpful for weaker students. In some cases, they encouraged peer-tutor relationships, but they felt they could not force students into such a situation. If weak students needed extra assistance, *Berufsschulen* teachers were much more likely to talk to the student's employer and arrange for extra assistance through the student's work supervisor. No formal program organized through the school offered support to the weaker students. Since teachers only spent 1 1/2 days each week with their students, they felt that they did not have enough time to develop close relationships with them or offer additional assistance.

In addition to the academic curriculum that they were responsible for teaching, *Berufsschulen* teachers also tried to foster qualities such as independent learning and the ability to solve problems individually and as team members. These were qualities which they saw as essential to effectiveness in the work environment.

The *Berufliches Gymnasium* offers the last 3 years (the *Oberstufe*) of *Gymnasium* but combines the academic offerings typical of a standard *Gymnasium* with courses of a vocational or technical nature. It is usually attended by students who have obtained either the *Realschule* certificate or its equivalent. In recent years, the *Berufliches Gymnasium* has also attracted students who have transferred from a standard *Gymnasium* to receive an *Abitur* that specializes in economics (i.e., business-related studies or technological sciences) the two most common specializations offered by *Berufliches Gymnasien*.

Just as in the *Oberstufe* at a traditional *Gymnasium*, course work at the *Berufliches Gymnasium* is separated into regular and advanced subjects. However, several individuals indicated that the level of student performance was lower at the *Berufliches Gymnasium* than at a standard *Gymnasium*. Teachers emphasized that they focused on covering the subject matter and preparing students for the *Abitur* and that this left little time for them to develop relationships with their students. However, one teacher indicated that he offered a review session for students entering the *Berufliches Gymnasium* so that they would be able to cover the material required for the *Abitur*. He also noted that the teachers spent time teaching students how to study.

None of the teachers we interviewed offered out-of-class assistance to students, although one indicated that the worksheets he gave out as homework were a repetition of material covered in class. If students were having difficulty or had questions, they were expected to take the initiative and approach the teacher. No after-school support programs, tutoring, or homework-assistance classes were offered by the school.

Mathematics and Science Instruction

The level of ability of the student population tracked to each of the various secondary school forms and the instructional goals of each of these forms affected both the depth and the speed at which material was introduced to students. This was clearly the case across all subjects, but we were interested in finding out more about mathematics and science instruction at the secondary level. In particular, we were interested in the ways in which mathematics and science instruction varied across school forms. We were also interested in whether mathematics and science were considered primary subjects in the education of all students, or whether the emphasis of these subjects was dependent on students' perceived vocation or education tracks. To understand this, we must first look briefly at mathematics and science instruction at the elementary level.

Grundschule. Mathematics is one of the two primary subjects emphasized in the curriculum at the *Grundschule*. A significant portion of each instructional day is focused on mathematics, and students begin receiving grades for mathematics in the second or third grade, depending on the state. The grade-point average calculated in the fourth grade and upon which students' tracking recommendations are made is based on the grades received in mathematics, German, and (in some states) *Sachkunde*.

At the *Grundschule*, sciences and social studies are all taught under the umbrella of a subject area called topical studies *Sachkunde*. Although the structure of *Sachkunde* varies somewhat with the curricular goals of the states, teachers in the central part of Germany said that they teach *Sachkunde* 2–4 hours a week with about one-third of the time devoted to subjects related to science. Teachers also said that *Sachkunde* provides an excellent opportunity for them to have students work together in small groups of mixed ability, thereby allowing the weaker students to work with and learn from their stronger classmates.

Hauptschule, Realschule, and Gesamtschule. Students are tracked into the *Hauptschule* and the *Realschule* for specific reasons. As a result, the student populations at these schools have distinct education profiles and needs. It is therefore significant that instruction in mathematics and science at each of these school forms is based on the pedagogical philosophy underlying the structure and purpose of each of these schools. A discussion of the course requirements and instructional methods used at these schools is important to understand the differences between them. It will also provide a basis for understanding the comparative rigor of the *Gymnasium*. The *Gesamtschule*, being a more open school form, attracts a greater diversity of students, but most are comparable in their level of ability to students enrolled in the *Hauptschule* or *Realschule*.

Hauptschule teachers noted that they expect their students to achieve a basic knowledge in all the primary subjects, including mathematics and science. Examples of mathematical problems found in everyday life are the foundation of instruction. Teachers stated that this connection to the real world is very important, not only for teaching mathematical skills that students are going to need throughout life, but also for maintaining student interest in the subject. New material is always presented in class, and students are given class time to do their worksheet problems.

Teachers walk around the classroom as students work on their problems individually or in pairs, assist students, and answer questions. The stronger students, who complete their worksheets ahead of the rest of the class, are given additional problems of the same kind on which to continue working. As in the *Grundschule*, teachers use worksheets as drills to reinforce class learning.

The C-level track of the *Gesamtschule* is essentially the equivalent of the *Hauptschule*, except that students who improve and receive grades of 1 or 2 can transfer to the B-level track, where more challenging material is covered.

There are slight variations from state to state in the course offerings which students at the *Hauptschule* are required to take, the number of hours per week they are required to take them, and the grades in which they are required (or begin and end). However, there is a strong belief that these courses are integral to the education of *Hauptschule* students. In most states, mathematics, physics, chemistry, and biology are all among the subjects required through their final year, the ninth grade. Presented below are two examples of state mathematics and science requirements for *Hauptschule* students.

Table 1—Math and science requirements by hours per week in *Hauptschule*

	Mathematics	Physics	Chemistry	Biology
Southern State				
Grade 5	5 hrs/wk	1 hr/wk	1 hr/wk	2 hrs/wk
Grades 6–9	5 hrs/wk	1 hr/wk	1 hr/wk	1 hr/wk
East-Central State				
Grade 5	5 hrs/wk			2 hrs/wk
Grade 6	5 hrs/wk	2 hrs/wk		2 hrs/wk
Grade 7	4 hrs/wk	2 hrs/wk		2 hrs/wk
Grade 8	4 hrs/wk	2 hrs/wk	2 hrs/wk	1 hr/wk
Grade 9	4 hrs/wk	2 hrs/wk	2 hrs/wk	1 hr/wk

SOURCE: Southern State—Bayerisches Staatsministerium für Unterricht, Kultus, Wissenschaft und Kunst [BSME] 1993; and East-Central State—Sächsisches Staatsministerium für Kultus 1993.

All *Realschule* students within a particular state have the same mathematics and science course requirements in grades five through seven. However, beginning in the 8th grade, they have the option of choosing curricular tracks, and mathematics and sciences course requirements will vary slightly, depending on the track which a student has chosen to study from the 8th to the 10th grade. The most commonly offered curricular tracks are the natural science, business, and social sciences. Of the three, the natural science track requires the highest level of mathematics and science ability and a larger number of total class hours in these subjects. However, the following comparison of mathematics and science courses in the natural science track and the social science track shows that there are not large differences in the number of required hours of instruction. Math and science courses are considered integral to the education of all students in the *Realschule*.

Math classes taken as part of the natural science track are sometimes referred to as advanced mathematics classes. What may be part of the natural science curriculum in one grade may be part of the business curriculum in a later grade. For example, our observations, made on the same day in a *Realschule* revealed that the 9th-grade students in the natural science track were covering essentially the same type of material as the 10th-grade mathematics class for business track students.

Table 2—Math and science requirements by hours per week in *Realschule*

	Mathematics	Physics	Chemistry	Biology
Natural Science Track				
Grade 8	4 hrs/wk	3 hrs/wk		2 hrs/wk
Grade 9	5 hrs/wk	3 hrs/wk	2 hrs/wk	
Grade 10	5 hrs/wk	3 hrs/wk	2 hrs/wk	1 hr/wk
Social Science Track				
Grade 8	3 hrs/wk	2 hrs/wk		2 hrs/wk
Grade 9	3 hrs/wk	2 hrs/wk	2 hrs/wk	
Grade 10	3 hrs/wk	2 hrs/wk	2 hrs/wk	1 hr/wk

SOURCE: BSME 1993.

In all *Realschule* classes, teachers expect the students to work at a higher standard and more independently than at the *Hauptschule*. The course work is a mixture of practical and theoretical lessons, and teachers expect students to participate more in class. Students receiving a *Realschule* certificate in any of the three tracks are entitled to continue their studies at a *Gymnasium*, *Berufliches Gymnasium*, or advanced-level vocational training program which leads to a mid-level professional position, so the required mathematics and science preparation received in all these tracks is quite high. Math and science classes offered at the *Gesamtschule*, which are equivalent to those in the *Realschule*, are the A- and B-level classes.

Gymnasium. The level of mathematics and science offered at all *Gymnasien* is very high, and mathematics continues to be a course requirement for all students through the 13th grade. However, some differences in the requirements exist depending on the curricular orientation of the *Gymnasium*. *Gymnasien* which offer the mathematics and natural science orientation require students to take more hours of mathematics and science courses than students enrolled in other types of *Gymnasium*, such as the modern languages *Gymnasium*.

A breakdown of the mathematics curriculum offered in the *Gymnasium* in one of the more northern states shows that students study the following general topics in grades 7 through 10. Seventh-grade mathematics covers basic graph making, geometry, rational numbers, frequency, and probability. Eighth-grade mathematics covers linear functions, linear equations and inequalities, congruencies/geometric figures, and probability experiments in multiple stages. Ninth-grade mathematics covers linear equations systems, real numbers, quadratic functions and equations, and Pythagorean theorem. Tenth-grade mathematics covers potency, exponential and logarithm functions, area and measurement of circular objects, trigonometric functions, and Bernoulli chains (Niedersächsisches Kultusministerium 1989).

As noted above, however, the amount of mathematics and the amount and type of science which students are required to take depends on the type of *Gymnasium* the student attends or the curricular track (if *Gymnasium* offers more than one track) chosen . Requirements for two different types of *Gymnasium* in a southern state show that the differences are not large and do not begin until the eighth grade.

Table 3—Math and science requirements by hours per week in *Gymnasium*

	Mathematics	Physics	Chemistry	Biology
Mathematics/ Natural Science				
Grade 5-7	4 hrs/wk			2 hrs/wk
Grade 8	4 hrs/wk	2 hrs/wk		1 hr/wk
Grade 9	4 hrs/wk	2 hrs/wk	3 hrs/wk	2 hrs/wk
Grade 10	4 hrs/wk	3 hrs/wk	3 hrs/wk	2 hrs/wk
Grade 11	5 hrs/wk	3 hrs/wk	3 hrs/wk	
Modern Language				
Grade 5-7	4 hrs/wk			2 hrs/wk
Grade 8	4 hrs/wk	2 hrs/wk		1 hr/wk
Grade 9	3 hrs/wk	1 hr/wk	3 hrs/wk	2 hrs/wk
Grade 10	3 hrs/wk	2 hrs/wk	3 hrs/wk	2 hrs/wk
Grade 11	3 hrs/wk	2 hrs/wk	3 hrs/wk	

SOURCE: BSME 1993

In addition, students may elect to take mathematics as one of their two required *Leistungskurse* in grades 12 and 13. While requirements may vary across states, in the *Gymnasien* at our primary research site, *Leistungskurse* met 5 hours a week, and *Grundskurse* (minor subjects) met 3 hours a week.

Teachers said that the level of the course material in the *Leistungskurse* is deeper and more theoretical than in the *Grundskurse* and that they use different textbooks than in the *Grundskurse*. One teacher described his view of instruction at the *Leistungskurs* level in the following way:

> In the advanced courses one has more time and can go through more complex trains of thought. And naturally one has better people in advanced courses who understand the material better, so one goes into more depth and the students participate to a much greater extent.

The students we spoke with said that they chose *Leistungskurse* based on their strengths and their interests and that these reasons often resulted in classes that were more homogenous in level of ability. One student explained it this way when asked about class diversity and class participation:

> In *Leistungskurse* the standard is rather homogenous. We only have small differences in performance level and students keep up with the material. This situation is facilitated by the fact that you choose only two majors. The bigger differences are in the minor subjects. The teacher usually explains the material there so that all students understand. Homogeneity in the *Leistungskurse* is also sustained by the possibility to change majors in the second semester of 11th grade. By then, students should know whether they can follow the material properly or whether they have problems.

Students also noted that the selection of *Leistungskurse* was often based on what students thought they might study at the university, and most students we spoke with at the *Gymnasien* indicated that they thought at least 80 percent of their class would attend a university. Therefore, those students who were taking math and science *Leistungskurse* were receiving very high level and concentrated study in subjects which would prepare them for study at the university in a wide range of scientific careers.

In summary, it can be said that mathematics is one of the core courses for German school children at the *Grundschule*, and it continues to be a core course for all students at the secondary level, regardless of the school form, which they have been tracked to. Science courses are also required of students in all school forms, and the diversity of the science subjects required at the *Hauptschule* is no less than that required at the *Gymnasium*. Students at all school forms are introduced to biology, chemistry, and physics from at least the sixth grade on, and biology is a required subject in the fifth grade in most school forms. The methods of instruction, depth of the material presented, and the speed at which it is covered are adjusted to the level of ability of the student population in each of the school forms, but mathematics and science courses are considered to be essential to the education of students of all levels of ability.

Career Development and Career Advising Within the Secondary School Forms

The division of the student population into distinct school forms by level of ability affects all aspects of student instruction. Academic subjects are offered to students in all school forms, but the construction of choices varies across school forms. In addition, the different school forms differ in the ways in which they facilitate career development and career choices. One of the implicit understandings of the differentiated school system is that students make career choices and enter the labor force at very different ages, depending upon the secondary school form in which they enroll. Consequently, we were interested in investigating both how the various school forms structured their

curriculum in relation to career expectations and the ages at which students were first introduced to issues and activities related to career planning. We were also interested in the nature of the advising services schools provided students to assist them with their educational and vocational choices.

Hauptschule. Classes are not usually tracked within the *Hauptschule* itself. Instead, teachers at the *Hauptschule* use a variety of instructional techniques to help all students learn. Although students tracked to the *Hauptschule* are those who have displayed the lowest academic achievement at the *Grundschule*, they are required to continue to study core academic subjects through the ninth grade. However, *Hauptschule* also offer classes with a vocational orientation, such as home economics, textile work, crafts, metal work, use of computers, and technical drawing. These classes are subunits of a required subject called *Arbeitslehre.* They are designed to allow students to discover their strengths and to prepare them for further vocational training.

Vocational counseling services are considered a basic necessity at the *Hauptschule.* A specific vocational guidance program is provided beginning in the seventh grade and continuing through the ninth grade. In most states this program is directed by the *Arbeitslehre* teacher with varying degrees of outside support services. In central Germany, social workers from the city or region in which the school is located visit the school to work with the students throughout the last years of *Hauptschule.* They seek to prepare students for the working world, show them the location and procedures of the government employment office and discuss the services it can provide. In addition, the social workers go with the seventh- and eighth-grade students to a vocational education center where they can learn about specific training programs for various trades. The students can observe the training program and see what the type of work that interest them in actually entails. Social workers also work with the *Hauptschule* teachers to coordinate the students' practical training. In the seventh grade, the practical training is divided into two training opportunities at two different firms for 2 weeks each. Another practical training period occurs in the ninth grade. This practical training period lasts for 3 weeks and can sometimes lead to a contract with a firm and the path to the dual vocational education system following completion of the *Hauptschule.*

Realschule. Students who demonstrate average or above average ability in the *Grundschule* continue their academic preparation at the *Realschule.* In the 8th grade, *Realschule* students select one of three academic tracks which they follow through the 10th grade. In the southern region of Germany, these academic tracks were divided into three areas: the natural sciences, business, and the liberal arts. These tracks were described by one of the teachers in the following way:

> The mathematics branch focuses on mathematics and technical drawing. The commercial branch deals more with commerce and accounting, and in the liberal arts track, arts education, and social sciences are more important.

Although all *Realschule* students are required to take math and science through the 10th grade, a division by ability (and interest) begins to occur when students chose a track. The natural science and business tracks require students to take more advanced mathematics classes than does the liberal arts track, and students are aware of these differences. Tracks are generally considered preparatory for more advanced study or training of a similar nature, and track selection can have an important impact on later career or training choices.

Vocational and technical career choices are greatly expanded for *Realschule* students when compared to *Hauptschule* students. In addition, it is possible for *Realschule* students to pursue the *Abitur* through either the standard *Gymnasium* or the *Berufliches Gymnasium* following the receipt of their *Realschule* certificate at the end of the 10th grade.

The methods of providing career guidance at *Realschulen* varies somewhat among the states; however, the focus of career guidance for *Realschule* students is similar across states. Unlike the *Hauptschule*, where the focus of career advising is largely on apprenticeship programs, *Realschule* students are given information on other opportunities for further schooling as well as on apprenticeship programs. At a *Realschule* we visited in the southern region of Germany, career guidance was primarily provided by teachers. In this *Realschule* a teacher who was designated as the advisor for career guidance informed the students about which schools were available to them after they completed the *Realschule*, and he established contact with vocational guidance professionals at the government employment office. Another teacher was designated to assist students with information about professions and help them find internships. A guidance professional from the government employment office also visited the school every month to talk with the ninth-grade students, discuss the classes they had taken and school or training programs which would be appropriate for them following their completion of schooling at the *Realschule*. In addition, the school encouraged students to do some form of practical training during the Easter break.

Gesamtschule. Although students in *Gesamtschule* do not select pre-established tracks such as those at the *Realschule*, *Gesamtschule* students can select from a number of elective subjects beginning in the seventh grade. The selection of electives operates as an informal tracking mechanism within a school that accommodates a wide range of differences in ability. Students' choices can influence the educational options, which are available to them following their 10th grade at *Gesamtschule*. For instance, students who plan to attend a *Gymnasium* following *Gesamtschule* must study two languages in addition to German. Therefore, elective courses are usually selected with some general academic or vocational goals in mind.

In addition, students at the *Gesamtschule* are placed into basic- or advance-level courses in most of their major courses from the seventh grade. Since advanced-level courses are required for the *Realschule* certificate and for continuance into a *Gymnasium*, enrollment in the advanced-level courses becomes important for students who hope to

have a broader range of educational or vocational choices. Therefore, the motivation to achieve placement in advanced-level courses can depend on a student's awareness of the relevance of these classes to their future and the amount of thinking they have done about their educational or vocational goals.

As students enter the 7th grade, the school encourages them to think about their future goals by requiring them to indicate to the school what they will probably do later on: for instance, whether they intend to leave the *Gesamtschule* at the end of the 9th grade with the *Hauptschule* certificate, at the end of the 10th grade with the *Realschule* certificate, or whether they intend to continue their studies and attempt to obtain the *Abitur*. Then, at the end of the eighth grade, the school sends a letter to the parents of each student indicating the most likely leaving certificate their child will achieve (future performance is projected from performance results through the eighth grade). The letter is not meant as a final dictum but is rather to serve as a guide for students and parents in their deliberations on academic-vocational career options.

Although further research would have to be done to determine whether the school or parents were more influential in informing students of their educational choices and the consequences of various decisions made in their early adolescent years, it was clear that students were fairly well informed. The students with whom we spoke were aware of the differences between basic- and advanced-level courses: the difference in the level of difficulty, in the extent to which the material was covered, how students were placed in these levels, and the impact placement had on whether or not study at a *Gymnasium* would be possible.

When we asked students and teachers whether students who are primarily in basic-level courses received advice on later job opportunities, they said that such counseling began by the eighth grade and that students who intended to leave with the *Hauptschule* certificate received training concerning vocational choices to determine where their skills lie. They also mentioned an interest survey which students were required to complete and the opportunity for a 3-week *Berufspraktikum* (practical training) at the end of the eighth grade. The *Gesamtschule* maintained lists, accessible to students, of firms that were willing to participate in the practical training program. One of the teachers also mentioned that a course called *Berufskunde* (career studies) was required in the ninth grade; it taught students about various professions and about the organizational forms of business and labor laws that apply to each form.

Gymnasium. Since *Gymnasien* focus their instruction by providing one or more academic tracks, parents track students into a particular academic track when they select a *Gymnasium* for their child.

Although the curriculum from the fifth through the eighth grade is entirely prescribed according to the requirements of the education track they are in, students described the situation as more flexible beginning in the ninth grade. The primary subjects remain requirements, but in addition students are able to select courses of interest. Then in the 11th grade, students select two *Leistungskurse* (majors) in which they will take a series of

advanced-level courses during grades 12 and 13, and the rest of their required courses are taken at the basic level. Students described the selection of *Leistungskurse* as an opportunity to specialize in subjects of particular interest, and they said that the *Leistungskurse* provided good preparation for further study at the university. They are not compelled to continue with these same subjects as their major at the university. However, students recognized that if a student switched areas entirely when entering the university—from social sciences to the hard sciences, for instance—the student may lack the necessary preparation for study in that area at the university. Since nearly 80 percent of *Gymnasium* students enroll in a university following their *Abitur*, they were aware that the selection of their *Leistungskurse* was important not only to their final *Abitur* grade but also to their future educational goals.

From the interviews we conducted, it appeared that the opportunity to explore careers that was provided to students at the other school forms was generally not provided to *Gymnasium* students. The focus of the counseling that did take place was on entrance into university and on the university system itself and was not oriented toward careers. This is a reflection of the fact that historically the *Gymnasium* has prepared students for university study rather than for jobs which require technical skills. One student told us that a guidance professional from the government employment office came to the school and talked about the "situation at universities - how long it would take to get a degree, what the situation was like there, the importance of the grade average on the *Abitur* for admittance at a university. However, he gave little information about what we will face after university." Another student reported, that "there is an information week provided by universities where you can talk to individual professors or advisors from the employment office. Those who want to go to a professional training program do not have good counseling." From this statement, at least, it appears that the approximately 20 percent of students who receive an *Abitur* and decide not to continue on to the university receive little guidance regarding other options.

In fact, several people said that many students are interested in the *Abitur* as a gateway to other professional opportunities and see the *Abitur*, combined with a professional training program, as a means of securing employment in a very competitive job market.

Both teachers and parents told us that employers have inflated their job requirements. Some positions that in the past only required a *Realschule* certificate are now being filled by individuals who have an *Abitur*. And, in fields such as business and banking, *Abitur* holders who complete professional training programs are hired more readily than university graduates, because they have actual work experience. Some students who plan to study at a university are completing a professional training program first, so that upon graduation from the university they will not only have the university degree but also some work experience to make them more attractive to employers. The appeal of the *Abitur*, therefore, has increased in recent years as a larger percentage of the population has come to see it as a certification leading to greater opportunities for employment, especially when combined with professional training. However, it appears that career-advising services at the *Gymnasium* have not kept up with the broader spectrum of career aspirations of those studying for the *Abitur*.

Berufsschule. Students select a career path when they make the decision to attend a *Berufsschule* to pursue study and training in a particular trade or vocation, and they are tracked at the *Berufsschule* according to the vocational program, which they have chosen to pursue. Classes are generally kept together throughout the 2 to 3 year program so that all students enrolled in a particular program attend the same lessons together.

Although we have limited data on career advising, it appeared that the student's apprenticeship supervisor was primarily responsible for the student and assumed an advising function regarding the student's vocation. Additional career guidance was not provided, although teachers pointed out that if they had questions students could talk to them, or to a representative of the industry and trade council, or to both. Although students can change vocational tracks, they must start at the beginning of a new vocational program.

Berufliches Gymnasium. As noted in the earlier section on the *Berufliches Gymnasium*, this *Oberstufe* is a variation of the standard *Gymnasium*. Students who chose this type of *Gymnasium* usually did so because it allowed them to specialize in subject areas, which they felt were directly applicable to the world of work. The students we interviewed, for instance, had chosen to attend a program specializing in economics, which gave them course work related to business and finance. Successful completion of their studies and the *Abitur* exam would qualify them for admission to higher education, including university study. Due to the limited number of individuals we were able to interview here, we do not have data informing us of any career or vocational advising that takes place in this school form.

In summary, the implementation of educational and vocational advising services vary greatly across school forms. The content and direction provided students vary as well as the age at which counseling begins. Students who are enrolled in school forms that end in the 9th or 10th grade are provided in-class and out-of-school opportunities for learning about the world of work. These include information about different vocations, skills and interest tests, meetings with staff from the local labor office, and internship experiences. All of this takes place during their early adolescent years. At the same time, the curricular decisions they make beginning in the seventh grade influence the occupation and education options which will be open to them as they leave the *Hauptschule* or *Realschule*. In contrast to this, *Gymnasium* students receive almost no occupational or career choice guidance. The guidance that is provided revolves around study at the university and usually occurs in their late adolescent years.

Flexibility Within and Between School Forms

Although the German education system tracks students based on their perceived level of ability into well-defined school forms, a certain amount of flexibility operates

throughout the system. This flexibility is primarily a function of formalized procedures that are available as options for assisting weak students. However, a few discretionary mechanisms also operate within the school and classroom.

Mechanisms for Flexibility Within School Forms

Grading. Teachers at all levels have some freedom in grading students' work. However, of all the teachers we spoke to, *Grundschule* teachers seemed to feel the most restricted. They must follow guidelines for promoting students to the next grade level, and the only variation in grading policy allowed *Grundschule* teachers is a different method of evaluating in-class dictation for dyslexic students.

According to teachers at the other school forms, there is a prescribed number of tests and quizzes required in the major subjects, and students are also graded on class participation. Class participation usually counts for one-third of a student's grade. The grade for class participation is derived from notes which the teacher keeps for each student, and can be an important factor in the final grade. For students who are in academic jeopardy, the flexibility allowed by including a grade for class participation means that teachers can raise a grade from a 5 to a 4 if they believe that there are sound reasons for doing so. Both *Hauptschule* and *Realschule* teachers said that they consider this to be very important, particularly when it comes to influencing the motivation of students. One *Realschule* teacher in particular said, "I arrive at a grade through calculation. . . .and then I stay with the grade within a certain range for free play. The goal is to motivate as well as reflect the mastery of the topic." Class participation is also graded at the *Gymnasium*, but teachers and students both indicated that grades are more strictly calculated than at the other school forms.

Flexibility in grading at the *Gesamtschule* can also mean that the grade a student achieves in a particular subject can result in a change of course level in that subject. One student explained:

> If you have a 1 (A) or a 2 (B) in a *Grundkurs*, you are permitted to go on to an *Erweiterungskurs*. However, if you had a 5 there, you would be asked to study more and put more effort in your work. With another 5, you would be asked to leave the *Erweiterungskurs*.

The second point at which teachers' discretionary powers can affect students' lives is at the end-of-year teachers' conference. At all of the secondary school forms, failing or near-failing grades are discussed at the teachers' conference, and the resulting recommendations can include promotion, retention, or transfer of a student. The discussion, which takes place before final assignment of grades, gives individual teachers the chance to present information relevant to the individual student's circumstances. A good grade in one subject can usually balance a poor grade in another subject. Or a student who might otherwise have received two failing grades might be given a grade of four in one subject and five in the other after some discussion by the teachers involved.

Retention. Another aspect of flexibility that can be found within German schools is the option of holding academically weak students at a particular grade level for an additional year, rather than promoting them with their classmates. The practice of retention was believed to be an effective way of giving a student a second chance to perform at the required level, when the conditions that led to the lack of performance were seen as surmountable.

One parent spoke of her perception of retention and the situation, which prompts retention in this way:

> The teachers really make an effort to keep weak students in class, but at some point it is not good to overburden these students. It is good for such kids to repeat a year. I know a student who has repeated a year and is much better now.

There are clear rules regarding the maximum number of failing grades a student can receive and still be promoted. Students who receive two or more grades of 5 or lower on their end-of-year grade report are retained for a year at the same grade level, and from our discussions with teachers and students, it was apparent that retention is a fairly common practice at all of the traditional school forms: the *Hauptschule*, the *Realschule*, and the *Gymnasium*. However, it is uncommon for students to be retained for more than 1 year. If the student's performance does not improve during the 2nd year, the school will request that the parents transfer their son or daughter to a less demanding school form. If a student at the *Gymnasium* has been held back for two grades (e.g., 6th and 10th), the student will not be allowed to continue on to the *Oberstufe*, but will leave the *Gymnasium* with a certificate equivalent to the *Realschule* certificate. Students at the *Realschule* who fail the 10th grade twice leave the school with either a *Hauptschule* certificate or, if their achievement was extremely low, a departure certificate, rather than the *Realschule* certificate.

The *Hauptschule* teachers we spoke to said that parents may ask for only a 1-year extension of the 9 years of education which the *Grundschule* and *Hauptschule* provide. The teachers decide in conference whether the student has the ability to benefit from the extension to obtain his *Hauptschule* certificate. If they believe the student will be able to perform up to the required level, the extension will be granted. Otherwise, the school will recommend that the student leave school with a departure certificate rather than a degree. Students may then choose to make up the *Hauptschule* certificate by attending night school or go into the *Berufsvorbereitungsjahr* (professional preparation year) to learn a trade. This alternative also allows students to continue to pursue their *Hauptschule* certificate if they wish. The teachers we spoke with said that only about 8–10 percent of the *Hauptschule* students leave the school with a departure certificate rather than the *Hauptschule* certificate.

Mechanisms for Flexibility Between School Forms

Transfer to a less demanding school form. Transfer to another school is usually the second option parents and teachers consider when a student is not working up to the level of ability required of the school form in which they are enrolled. Grade retention is often tried first, but if students are unhappy with the school environment they are in, they may decide to transfer to a less demanding school form right away rather than stay for another year. The flexibility of changing to a school form, which is less demanding, allows students to continue on an education track, which should lead to the successful completion of a certificate. Rather than fail in their education, they are likely to achieve a certificate, which will lead to other education and vocation options.

One parent spoke of the difference for her daughter after she transferred from the *Gymnasium* to the *Realschule*:

> At the *Gymnasium* it was just too much. I tried to encourage her, but she did not have what it takes. Despite studying she had 3's, 4's and sometimes 5's. Then she cried. She no longer holds back now that she is at the *Realschule*. This is her level. She studies, does her homework. It is fun for her. I think it is better for her to have a good *Realschule* degree than a bad *Gymnasium* degree.

Transfer from the *Gymnasium* to the *Realschule* is common, since obtaining a *Realschule* certificate does not preclude a student from enrolling in a *Gymnasium* or *Berufliches Gymnasium* to pursue the *Abitur*. It is less common to transfer from the *Realschule* to the *Hauptschule*, and most teachers we spoke with said that they try to do what they can to help students raise their level of performance and stay in the *Realschule*. Although students who graduate from the *Hauptschule* also have pathways to the *Abitur*, the *Hauptschule* has a poor reputation and the education received there does not provide adequate preparation for continuing in an academically based program. As a result, teachers and parents try to avoid sending a student from the *Realschule* to the *Hauptschule*. However, transfer to a lower school form does not have to be permanent. One parent spoke of her son, who had received poor grades at the *Realschule* and transferred to a *Hauptschule*. He applied himself at the *Hauptschule* for half a year and achieved grades that allowed him to transfer back to the same *Realschule*.

Two other options also exist for some *Gymnasium* students who are experiencing difficulty in meeting the demands of the *Gymnasium's* curriculum. Rather than transfer to a *Realschule*, students at a *Gymnasium* may decide to transfer to a *Gymnasium* with a less demanding reputation or to a *Berufliches Gymnasium*. These transfers are seen as lateral moves within the school system. For geographical reasons, however, opportunities for making such transfers are not available to everyone.

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Transfer to a more demanding school form. Student movement between schools was usually cited as an opportunity to place students at a level for which they were best suited, and in most of the cases described the movement was either lateral or downward to a less demanding school form. However, there were a few instances where students moved to a higher school form at a point in time that was not one of the "standard" points of transfer. For instance, so-called "late bloomers" move to the *Gymnasium* from the *Förderstufe* in the sixth or seventh grade rather than in the fifth grade. Also, students in the southern region of Germany were not precluded from moving into the *Gymnasium* from the sixth grade although they did not have the *Förderstufe* operating in their schools, and the transition was seen as more difficult to make at this stage.

Hauptschule students can transfer to the *Realschule* if their grades are high enough. They can also test into the *Realschule* if they do not have the requisite grade average for direct admittance. In the southern region of Germany, which has a reputation for more rigorous standards across all schools forms than other parts of Germany, a significant proportion of students entered the *Realschule* by taking the admission test. We were told:

> Approximately 60 percent of a year's kids attend continuing schools, 30 percent in the *Realschule* and 30 percent in the *Gymnasium*. Two-thirds of the students enter the *Realschule* on the basis of their grades and one-third enters on the basis of the admissions test.

The flexibility between school forms therefore is not entirely one way. Students are allowed to try out a new school form if they have the required grades or if they pass the admissions test. If they prove themselves capable of performing at the required level during the probationary period, they are allowed to stay there. Otherwise, they are transferred to the appropriate school form.

Perception of the System's Flexibility and Fairness

We asked students, parents, and teachers what they thought of the differentiated school system and whether they saw it as being fair. Teachers were the system's strongest advocates. They voiced the opinion that the system was flexible and that opportunities for the *Abitur* or advanced training existed for everyone. The following statement from a *Berufsschule* teacher well reflects the opinions stated by several teachers we spoke to—all teaching at different school forms:

> The German system is fairly flexible. There are many ways to the same goal. I think it is good that one can get to the *Abitur* through different paths, no matter on which path one has started. Even if the student has dropped out for a while, there are ways to get the *Abitur*. I think this is a very good thing.

Parents also were generally very supportive of the differentiated system. The rational for tracking students into different schools was clear for them. A typical statement of support for the differentiated school system was made by a parent of a *Grundschule* student:

> I like the practice of dividing students by school. Only when the students are separated into groups according to their ability is it possible for one teacher to challenge adequately all the students in the group. If the differences among the students are too great, then the teacher can only teach to the average, and some students are not challenged and other students are over challenged.

Despite the general consensus that the differentiated system provides an appropriate level of challenge for children with differing abilities, several parents felt very strongly that the system was not working optimally when students were divided so early in their schooling. This was the most notable criticism voiced by parents in all three states. Particularly dissatisfied were the parents and teachers in the former East German state. Prior to unification the school system there did not divide students into tracks until after the 10th grade, and there was almost unanimous belief that the division following the 4th grade was far too early. Many parents from both the former East and West states said it would be better if students were not divided into tracks until "a couple of years later"; they stated that students who were "late bloomers" were at a disadvantage in the traditional school system.

For several parents we spoke to, the *Gesamtschule* and the *Förderstufe* were important additions to the differentiated system, because they allowed more time for students to mature and develop their interests. They gave late bloomers a chance at upward mobility, adding flexibility to the system which otherwise might have tracked a student into an inappropriately low school form and not allowed the student to be adequately challenged.

The parents' perception of the flexibility of the system was also evident in the examples parents gave of students who had either repeated a year of their schooling or changed school forms. Parents, teachers, and students all saw retention as a very normal occurrence and there was no particular stigma attached to it. Students easily talked about their classmates who had been held back or others who had joined their class from the previous year's class. This was particularly true of students at the *Gymnasien* we visited. One student from a *Gymnasium* in southern Germany stated that, "there was hardly a class in which less than 10 percent of the students had to stay back a year, and in my class nearly 25 percent had been held back by the eighth grade." Students and teachers did not report any negative social aspects for the class or for students who were retained.

School transfer was described as another very acceptable and common way of allowing a student to adjust within the system. Many people we spoke to noted that parents sometimes pushed students into an inappropriately difficult school form. The student is able to stay there through hard work but at the cost of excessive stress. Over and over

again, parents said that it was better for the students if they were "suited" to the school in which they were enrolled. If a school was too difficult, then the student was under too much stress, would lose interest, and do poorly. Parents and teachers agreed that a student who finished the *Abitur* or the *Realschule* certificate with poor results was worse off in the job market than a student with a less demanding degree and good results. Therefore, the degree results—not just the degree—were important. Everyone recognized that if the student's grades were in jeopardy, the student could either repeat a year and learn the material in order to improve their grades or change to a less demanding school form and receive good grades on a degree which would still leave many of the same education or vocation training opportunities open.

Equity

Our understanding of issues related to equity within the education system is based on published statistics as well as on information from observations and interviews we conducted. Information on the distribution of funds and physical resources across schools and across school forms is presented in the first of three segments related to equity. However, given the fairly even distribution of funding and physical resources, we were also interested in discerning whether the school system provides the same opportunities to everyone. Therefore, the second segment deals with equal access to learning and the primary factors which people perceived as influencing access and outcomes. And lastly, we describe in the third segment information collected about gender distribution in relation to the tracking system.

School Facilities Across School Forms and Neighborhoods

Data on funding sources for schools in Germany shows that 79.2 percent of the funding for all of the primary- and secondary-level school forms comes from the states and 20.8 percent from local government and nonprofit organizations (KMK 1993). We were told by several teachers and parents that the amount of money schools receives are determined by the number of students they enroll. One parent in particular stated, "In principle, all schools have the same amount of money, allotted by the state and the municipal education office." This system was seen as providing for a relatively even distribution of resources across schools in each state. Although administrators did not complain about an inequity of funding across schools, all noted that school funding has been affected by Germany's recent economic difficulties, and they described their school budgets as tight.

A few teachers and administrators said that differences in community affluence contributed to some inequality in education experiences. However, they noted that at least at the *Grundschule* level, some of the inequality was not the result of differential funding levels from local governments as much as the result of parental fund-raising activities. Parent groups were active in all the *Grundschule* we visited, although their level of involvement and their contributions to the schools were quite diverse. We were

told that money raised by parent groups was often used to provide supplemental activities, such as field trips and after-school activities. One *Grundschule* in a predominantly middle-class suburb was able to provide enough funding for after-school programs, including theater and music. A *Grundschule* in a much less affluent working-class neighborhood with a school population that was over 60 percent foreign students received materials from the city for painting the classrooms, and parents did the painting. A member of the parents' council from this school noted that they had difficulty raising funds for extra supplies and activities because of the limited financial resources of many of the parents in the neighborhood. While a parent from this school noted that government cutbacks in funding in recent years had led to an increase in differences between *Grundschulen*, she felt there was nothing that could be done about it. "That's just the way it is," she said.

The age and architectural structure of the school buildings were often representative of their neighborhoods. A *Gymnasium* in the central part of a large city was 125 years old. Another *Gymnasium* located on the outskirts of a smaller city was no more than 10 years old. Despite the differences, they were both considered very good schools and there did not appear to be discrepancies in terms of the resources within the buildings. This comparison holds across school forms as well. From what we could tell, the *Gymnasium* did not have preferential treatment; *Hauptschule* and *Realschule* seemed to be receiving their fair share of resources. The situation was similar in all three states. A combined *Haupt/Realschule* in the former East German state had recently been remodeled, while the *Gymnasium* was in a modern concrete building (in a neighborhood of concrete apartment buildings). Equipment and supplies found at all three school levels here were observed to be similar to those in use at schools in the other states, and general complaints about tight operating budgets were similar as well. While some inequities may still exist between schools in the former East and West states, great efforts have been made to support education in the economically depressed East.

The school buildings reflected the orderliness of German society in general. Regardless of the fact that some were over a century old, they all were in generally good physical condition and can be characterized as functional, clean, and uncluttered. Except for the *Gesamtschule*, which was an all-day school, hallways displayed very little artwork or other evidence of student activity, and most of the schools were built around a central courtyard where the main entrance was found and where students played or congregated before school.

Access to Education

There is complete equity of access to public education at the elementary level in Germany. The egalitarian instructional philosophy that molds education methodology at the *Grundschule* provides, within the limits of school, equal access to the prescribed subject material. At least this is perceived to be the situation for the children who enter *Grundschule* ready to learn. For foreign students lacking fluency in the German language, schools provide an additional German language course in an effort to build and strengthen their language skills and enhance their opportunities for learning in the

classroom. For students needing additional work on motor skills or social skills in the first years of schooling, a social pedagogue teacher provides around six to eight supplemental teaching hours per week in the classroom. These supplemental activities are remedial and yet an extension of the philosophy that a good educational foundation must be provided to all students in the *Grundschule*. The foundation is, in fact, seen by teachers as a rather rigid set of curricular and testing guidelines that are set by the education authorities of the state. These guidelines prescribe what all children are required to learn through the fourth grade. The importance of these guidelines is reinforced by the fact that for the majority of children in Germany, the fourth grade is the point at which their future educational track is set. And although the school system beyond the *Grundschule* is somewhat flexible, upward mobility at the secondary level is less likely than lateral or downward mobility. Beyond the lower secondary level, a new set of options arises, but these are dependent on the educational foundation the student has achieved through the lower secondary level.

The individuals we spoke with saw the segregation of students into differentiated school forms at the lower secondary level as a way of providing students with an education appropriate to their capabilities and giving them the skills they need to become productive members of society. Most people stated that they believed that this system works well for a majority of the student population. Moreover, the fairness of the system was often described in terms of the multiple paths it provides to the *Abitur* or to advanced professional training.

At the same time, many people also acknowledged the influence of diverse cultural and environmental factors on the educational achievements of children. They described social problems that affected families and children more frequently in the lower socioeconomic levels of society and concluded that these problems contributed to different educational outcomes for these children. In particular, they pointed out that children who are naturally "late bloomers," children who enter the school system with lower levels of preparedness, and children whose out-of-school environment does not support education and learning were at a disadvantage and were often forced into the *Hauptschule* by their deficiencies. A lack of family support, poor home environment, and German-language difficulties were often cited as factors which kept students from performing at higher levels and kept them, in disproportionate numbers, in the least demanding school form and therefore in lower-level vocational occupations. But external influences on ability were often seen as beyond the control of the school system. A *Hauptschule* teacher stated it in this way:

> I think that the system offers people who are willing to perform the opportunity, irrespective of their national background. The problem lies in the fact that many of the families that have come to Germany are from the uneducated classes of their homeland. The parents are often illiterate and cannot help their children.

Many teachers and parents told us they believed that parents who themselves had attended the *Gymnasium* or *Realschule* were in a much better position to assist and encourage their children in their educational pursuits than those with less education. They also said they believed that parents who had attended the *Gymnasium* or *Realschule* often had higher educational aspirations for their children and saw the opportunities that a higher degree would provide. These parents communicated more frequently with their children's teachers through parent conferences or office hours, particularly if they thought their child was having difficulty meeting the necessary standards. One parent touched on some of these issues:

> The percentage of foreigners in a *Hauptschule* is high. These schools would also be attended by students whose parents are unemployed, whose social background is brittle, and whose parents have no higher education. Seldom do we find children of parents who only went to a *Hauptschule* themselves attending a *Gymnasium* or even a *Realschule*.

Within all of the school forms, innate intelligence, home environment, and student effort were the primary factors, which were described as contributing to success in school. Teachers saw it as their responsibility to foster learning for all the students in their class, but student effort was seen as a factor affecting student performance and therefore achievement. Even in the *Grundschulen*, teachers often cited willingness to learn as an important characteristic of a successful student. Once students were tracked to a lower secondary school, they were seen as being fully capable of performing at the required level as long as they were motivated to learn and put forth effort. The educational system continued to provide access to everyone at a level which was appropriate for them, and each certificate achieved opened the door to further opportunities. Only individuals who failed to obtain a certificate were perceived as being shut out of further education or vocation paths. Even for dropouts, however, institutions such as night schools were cited as providing a path for further education or training.

Two other factors affecting equity of access were mentioned briefly by teachers and parents. However, these factors were discussed matter-of-factly and did not seem to be a source of concern. One factor was the availability of private schools as an alternative to public schools. Private *Gymnasien* and *Realschulen* were said to offer education environments for students who needed more individual attention and tutoring to succeed. They were a kind of "safety net" for those who could afford them. Because of their expense, however, they were not a viable option for everyone. The second factor, which affected equal access, was geography. While the *Gymnasium* was available to anyone who met the standards for entrance, students in rural areas had fewer schools to choose from than students in urban areas. Multiple *Gymnasien* offering different curricular tracks and different reputations for difficulty and competitiveness were available in urban areas, whereas a rural area might offer only one *Gymnasium*.

Gender Distributions Across School Forms and Curricular Tracks

Gender equity was not an issue in the *Grundschulen* we visited. Classrooms were composed nearly equally of girls and boys. There was no attempt to separate or segregate students into separate sections by gender. In fact, this would have gone against the philosophy of the *Grundschule,* which promotes socialization of students and encourages them to understand each other. Many teachers stated that they try to treat all students the same and bring all students forward in their learning at about the same pace. If they noted any differences between the genders, the differences were based on classroom behavior. Some teachers felt that girls at this age were generally more focused and ready to learn.

Our classroom observations at the *Realschulen* and *Gesamtschulen* revealed that there was a relatively even distribution of males and females at both of these school forms and a smaller proportion of females at the *Hauptschulen*. Published statistics regarding gender and school completion support these observations. In 1992, female graduates comprised 43.8 percent of *Hauptschule* graduates, 51.8 percent of *Realschule* graduates and 52.3 percent of *Abitur* holders from traditional *Gymnasien* (Bundesministerium für Bildung und Wissenschaft 1993). Gender differentiation did not appear to be significant within the *Realschule* until students began their curricular-based tracks in the eighth grade. However, the different tracks did attract different proportions of male and female students. In the *Realschule* that we visited in one of the southern states, the gender differentiation was very pronounced. At this particular *Realschule*, the students we interviewed indicated that the technical-science track attracted a majority of males and the social science track a majority of females. The published data from this state supports our observations: 63 percent of the female students in grade eight in 1992 were pursuing studies in the fields of art, music, design, home economics or the social sciences; 29 percent were pursuing studies in the field of economics; and 8 percent were pursuing studies in mathematics and natural sciences (BSME 1993).

Although several curricular tracks exist in the *Gymnasium*, the two tracks, which attract the highest percentages of students, are mathematics-natural sciences and modern languages. Data from a southern state reveals gender enrollment patterns similar to those of the curricular tracks at the *Realschulen*: 43 percent of female students were enrolled in modern language tracks at *Gymnasien* and 29 percent in mathematics and natural sciences tracks at *Gymnasien*. In contrast to this, 57 percent of males were enrolled in the mathematics and natural sciences tracks at *Gymnasien* and 22 percent in modern language tracks at *Gymnasien* (BSME 1993). *Gymnasien* teachers we spoke with confirmed that male students are in the majority in the mathematics and natural sciences tracks. One teacher estimated that only about 30 percent of the students enrolled in the mathematics and science track in their *Gymnasium* were female.

In grade 11, *Gymnasium* students must choose the two *Leistungskurse,* which they will follow throughout grades 12 and 13. The grades, which they receive in these courses, count heavily in the final computation of their grade in the *Abitur*. Because of this, students choose fields that interest them, and fields in which they feel confident. One of the two *Leistungskurse* must be chosen from a foreign language the pupil has studied in years 5–10 or be mathematics or a science. The second *Leistungskurse* can be chosen without further limitation except that it must be from a different field of study from the first. Our observations of *Leistungskurse* mathematics classes, though somewhat limited in number, seemed to point to a higher selection of these advanced mathematics classes by male students than by female students. In most cases, we saw a male-female ratio of at least 2:1, and in one class the ratio was 3:1. This would seem to be further indication that girls are not pursuing mathematics as an interest with the same vigor as are boys.

Role of Socioeconomic Status and Ethnicity in Achievement and in Tracking

As noted previously, many of the parents and teachers with whom we spoke felt that home environment and family support had a direct influence on a student's ability to achieve. Traditional values of family life included a mother who stayed home for her children rather than working outside the home. Although many people recognized this option was not economically feasible for some families, they also noted that there were few after-school activities for children of working couples. Many teachers suggested that when both parents worked outside the home, young children would come home after school let out at mid-day to empty households and spend all their time in front of the television. Teachers felt strongly that these children suffered from a lack of motor skills and a lack of concentration, which affected their work in school. In addition, they said that these students often would not receive assistance with or supervision of their homework.

Conditions such as these were seen as prevalent in lower-income working class neighborhoods where dual-income families were much more common. This seemed to be confirmed by our discussions with parents of different socioeconomic groups. While dual job-dual income households were common in the working-class neighborhoods, it was still much more likely among middle-class families that the mother would stay home for her children rather than work. If she did work, it was usually at a part-time job. A statement from a teacher at the *Hauptschule* we visited in the lower socioeconomic neighborhood of a major industrial city summed up much of what we were told by other *Hauptschule* teachers:

> Today the parents expect the schools to do everything. . .Most of the parents both work and they have very high expectations for their kids, but they do not have the time or make the effort to make it happen.

Parental literacy was another factor, which was often mentioned as contributing to children's achievement difficulties. Literacy problems were not limited to foreigners. However, many teachers noted that children living in households where German was not spoken started school at a disadvantage and, even if they spoke German when they came to school, the range of their German vocabulary and understanding of their vocabulary was usually restricted.

Language requirements created a time-use issue for foreign students at all school forms, but particularly for students in the *Grundschule* and the *Hauptschule*. Students who were seen as having deficient German language skills were often recommended to after-school supplemental language classes. In addition, some states require foreign students to take language classes in their mother tongue. These classes are also offered in the afternoons following the regular school day. The combination of these supplemental courses can add up to more than 4 hours a week of additional class time. Teachers often noted that this resulted in a longer school day for these children and that it sometimes interfered with their ability to complete their homework. In addition, as students got older their other out-of-school interests sometimes interfered with their voluntary attendance at the supplemental German language classes.

Hauptschulen were often described as having poor reputations and large foreign student populations. From our observations, there is no doubt that a large percentage of the foreign students are tracked to the *Hauptschule*. Enrollment statistics from 1991 also support our observation and interview data. *Hauptschulen* enroll a larger percentage of the foreign student population than the *Gesamtschulen*, the *Realschulen*, or the *Gymnasien*. Foreign students made up 11.2 percent of the entire student population in 1991. However, they made up 20 percent of all students enrolled in *Hauptschule* in 1991, 12.9 percent of all students enrolled in *Gesamtschule*, 8.1 percent of all students enrolled in *Realschule*, and 5.1 percent of all students enrolled in *Gymnasium* (Arbeitsgruppe Bildungsbericht am Max-Planck-Institut [MPI] 1994). Of course, in some neighborhoods the foreign student population was much higher than in others, and in *Hauptschule* located in these neighborhoods the foreign student population was also higher than average.

Parental level of education was described as playing a very large role in the expectations parents held for their own children's education. Parents and teachers said that few parents who attended a *Realschule* or *Gymnasium* want their child to go to the *Hauptschule* unless it is absolutely necessary. Instead, they strive to enroll their children in a school form, which leads to one of the higher certificates and they provide the support and encouragement to make this a realistic goal. Also, an increasing percentage of foreign students are beginning to track into the *Realschule* and the *Gymnasium* as second- and third-generation foreign students enter the school system with greater fluency in German, and as familiarity with Germany and its education system leads their parents to realize that a higher-level certificate will be helpful to their children in obtaining a better job and attaining better economic opportunities. Teachers at the *Hauptschule* indicated that the foreign students were often more motivated than the German students at the *Hauptschule*.

Social prestige was also believed to be a factor involved in decisions about tracking for some parents, particularly when it came to tracking students to the *Gymnasium*. This appeared even more accentuated in the former East German state, since students who did not enter the *Gymnasium* went to the combined *Haupt/Realschule*. However, throughout most of Germany, many parents saw the *Realschule* an acceptable alternative to the *Gymnasium*, because it provided all of the opportunities for further education which were available to *Gymnasium* students without the intense academic environment.

A further distinction was made by a few individuals. Teachers at the classical language *Gymnasium* said that these *Gymnasien* tended to attract a more select group of students both in terms of intellectual interests and family background. The parents themselves had often attended a *Gymnasium*, which required Latin as the first language and were in a position to provide assistance with Latin. They also stated that families who had not themselves attended a *Gymnasium* would generally send their children to the modern languages *Gymnasium*, since English was seen as a more useful language to learn from the beginning.

Statistics bear out what parents and teachers told us about the influence of the level of parental education on the choice of a school form for their children. Parents with *Realschule* certificates enroll their children primarily in the *Realschule* or *Gymnasium*; parents who have their *Abitur* enroll their children more frequently in a *Gymnasium*. Statistics from 1989, for instance, show that 7.6 percent of 13- and 14-year-old students at the *Hauptschule* and 67.1 percent of the same age group attending *Gymnasium* came from families whose head of household worked as an employee and had an *Abitur*. Among German parents who worked as laborers without a vocation, the figures are almost exactly reversed (MPI 1994).

As was noted earlier, there is some pressure to strive for a higher socioeconomic status across all levels of society, and the general trend is for parents to enroll their children in school forms which open more doors to further education or higher levels of vocational training. Teachers often complained that this upward pressure had taken a layer of top performers from the *Realschule*, and therefore the average performance level was lower at these schools than it used to be. Teachers also felt that the positive influence these stronger students once had on their classmates as both role models and peer tutors was now missing. The same general comments were made about how this trend toward upward mobility has influenced students at the *Hauptschule*.

Education for Students with Disabilities

Although there is a movement toward the integration of students with disabilities into the regular public school system, few students with disabilities currently attend the regular public schools. Among the teachers we interviewed, only the *Grundschule* teachers and one *Hauptschule* teacher spoke of having a small number (one or two) of

disabled students in their classes. Disabled students who were integrated into the *Grundschulen* we visited were usually students described as dyslexic, learning disabled, or behaviorally disabled. The teachers noted that they try to keep these students at the *Grundschule* and have them repeat a year if necessary in order that the child can "at least graduate from the *Grundschule.*" A few teachers spoke of the extra burden which the classroom teacher faces when trying to integrate these students, since they have difficulty keeping up with the course work. However, one teacher said that the other children in the class can profit from the presence of a disabled child. "This particular child may know something that the others do not know. The children learn tolerance."

Parents we spoke to were also very supportive of efforts toward integration of children with disabilities. Several said that while there were few disabled students that attend the regular public school system, they approve of integration and felt that it would be good for their children to learn "from the very beginning" how to interact socially with children with disabilities.

A limited amount of in-class instructional support is provided to teachers who have integrated children with learning or behavioral disabilities into their classroom. The state provides funding for a specially trained teacher, who joins the class for approximately 5 hours a week and works on an individual basis with the integrated child. Although the laws in some states also allow children with physical disabilities to be integrated into the regular public school system, teachers and students we spoke to all noted that there were no physically disabled students currently enrolled in their schools. The one exception to this was a student at one of the *Berufsschule* who used a wheelchair. Most of the regular public schools do not have adequate facilities for children with physical disabilities. When this issue was discussed, the teachers pointed out that *Sonderschulen* are designed specifically for the special physical needs of children with disabilities.

The laws governing the procedure by which a child is assigned *Sonderschule* status are similar but not identical among the states and may also vary depending on the disability. Generally, children are recommended for consideration for a *Sonderschule* by their parents or guardians or by the public school they are attending. At this point, the child usually undergoes a series of tests including an assessment by an instructor of the *Sonderschule* to determine "the level of ability on which the child can learn, think and understand," a medical test, and perhaps an examination by a school psychologist. Following these tests, and based on their results, the school superintendent consults with the parents or guardians and makes the decision regarding attendance at either the *Sonderschule* or the *Grundschule.*

The parents and teachers in the regular public schools were familiar with the limited integration of students with disabilities within these schools, but had limited knowledge of the *Sonderschulen.* We were unable to visit *Sonderschulen*, but information is available from published reports.

Several basic types of *Sonderschulen* exist in Germany, although they may vary somewhat across states. They include schools for the slow learner, behaviorally disordered, mentally disabled, physically disabled, speech disabled, hearing disabled, and sight disabled. Approximately 18 percent of the *Sonderschulen* are privately run, and most of those specialize in teaching the sensory impaired (KMK 1993). The majority of *Sonderschulen* are half-day schools. Of the total school population, approximately 4 percent are enrolled in *Sonderschulen*. Over half of these are in schools for the learning disabled (MPI 1994). Only 0.15 percent of all students attend *Sonderschulen* for behavioral problems (MPI 1994). The *Sonderschule* for learning disabled students is somewhat successful in its goals of assimilation, as one in eight children reenter regular schools after visiting the *Sonderschule*, and others complete their *Hauptschule* certificate at the *Sonderschule* itself (MPI 1994). Unfortunately, because of the general economic hardship and tight labor market which currently exists in Germany, children with learning disabilities often have slim chances of obtaining an apprenticeship.

Children with physical disabilities have a better chance of completing their education. Most sensory-impaired children complete the requirements for the *Hauptschule* certificate, and many students who have impairments in vision or hearing complete the requirements for the *Realschule* certificate or the *Abitur* at *Sonderschulen* for the sensory impaired (MPI 1994). Although teachers of the regular public schools we visited in Germany said they were unaware of any sensory-impaired students in their school, one school employed a teacher who was blind.

Education for the Gifted Student

There are no institutionally organized programs at the *Grundschule* level which promote gifted students in their first 4 years of schooling. Teachers and parents said that efforts to promote gifted students were left up to the individual classroom teachers. Some teachers said they gave the gifted children in their class extra exercises or a little additional homework, but there were no school policies or guidelines from the state which dictated what they must do. Teachers believed that all students' talents and abilities should be strengthened and encouraged, but children's education should include learning to be a part of a group and learning to help one another, as well as learning academic subject matter. *Grundschule* was also supposed to be an enjoyable experience. Teachers and parents believed that students who were more academically able would be promoted to a more demanding school soon enough, and there was no need to place extra strain on them at this level.

The traditional tripartite education system, which begins at the fifth grade, is designed to promote the most talented students into the most challenging school form, the *Gymnasium*. The curriculum, standards of performance, and academic orientation of

instruction in the *Gymnasium* are meant to challenge the best and brightest. And although a range of abilities was also seen to exist with in the *Gymnasien*, the high standard for entrance ensures that the overall level of ability of students enrolled in *Gymnasien* is high.

Most students said that gifted students have the opportunity to excel particularly within the *Leistungskurse* offered in grades 12 and 13, because these courses are more concentrated and at an even higher level than the regular *Gymnasium* courses.

It was often explained that special programs do not exist for gifted students at the *Gymnasium*, since the academically oriented classes are already very rigorous. However, the system does provide another means of promotion for particularly gifted students. Although it is not common, teachers and students stated that gifted students are occasionally allowed to skip a grade. One teacher knew of a student who had been allowed to skip the 5th grade, and a student noted that one of his classmates had been allowed to skip the 11th grade. Because of the limited number of individuals in our study who were aware of such incidences, we cannot state whether there are some grades which are easier to skip or whether the grade at which a student skips ahead is strictly dependent on the particular student in question.

Although the schools themselves did not have programs or classes designed specifically for gifted students, a few extracurricular activities were sometimes available through the schools. In particular, teachers and students said that a few limited opportunities, such as academic competitions and out-of-school seminars and research opportunities, were available to especially talented students. Within the limits of our study, we were unable to determine the frequency of their occurrence, the number of students involved in these activities, and variations across the states. However, we were told that student participation in these activities was based on academic performance at the *Gymnasium* and dependent on teacher recommendations.

Not surprisingly, when teachers at *Realschulen* and *Hauptschulen* were asked about programs or resources for gifted students, the typical response was that there are no special classes or programs at these schools. The best and brightest students do not attend the *Realschulen* or the *Hauptschulen*, because in most instances they have been channeled to the *Gymnasium*. Rare exceptions were noted in the case of Muslim female students who sometimes are not tracked to the *Gymnasium* because their parents do not feel it is necessary or appropriate for a woman to obtain the *Abitur*.

In states where *Gesamtschulen* exist, parents who believe in the goals and philosophy of this school form may decide to send their gifted child to a *Gesamtschule* rather than a *Gymnasium*, even though *Gesamtschulen* enroll only a small percentage of the student population at the lower secondary level. As mentioned earlier, the *Gesamtschule* offers

A-, B-, and C-level courses. A level courses are the most demanding of the three levels. Top performing students, including gifted students, enroll in A-level courses through the 10th grade, at which point they either transfer to a traditional *Gymnasium* or possibly continue into an *Oberstufe* connected to the *Gesamtschule* to complete their studies for the *Abitur*.

Clearly, gifted students are provided for within the tripartite system. The *Gymnasium* is a rigorous and competitive school, which prepares students for intellectual life and study at the university. As children leave the *Grundschule*, parents try to choose a *Gymnasium* which they feel is appropriate for their child. In urban areas parents can choose from among the best of the various *Gymnasium* for their gifted children. Of course, *Gymnasien* with strong traditions of excellence provide an even greater opportunity for gifted students to compete and excel.

Summary

Several aspects of the German education system are fundamental to any discussion of the ways in which individual differences in ability are dealt with within the German schools. First, the education system across states is relatively uniform. Although the states set the education policy and are the primary source of funding for elementary and secondary education, representatives of the states work together to assure a high level of standardization and comparability in educational outcomes. Second, tracking at the secondary level is rooted in the assumption that people have different capabilities, that these capabilities can be assessed and an appropriately tailored education provided if students of differing levels of ability are segregated into separate school forms, and teachers can instruct groups of students who are homogenous in level of ability. Third, although students are tracked at an early age, there is some flexibility in the system that allows for movement between school forms and many educational and vocational options exist. The different options lead to education or vocation programs, which upon successful completion lead to qualification for a particular profession.

The educational system has clearly stated goals and expectations for students at the different school forms, and teachers' instructional activities, lesson plans, and interactions with students reflect and support the goals and expectations of the school form in which they teach. They teach to a standard, which is meant to challenge students appropriately who have been assessed and tracked to a particular school form. The question of "fit" is always foremost in the mind of educators as well as parents. If students have been tracked to the appropriate school form and if they apply themselves, they will be able to perform at the level required by that school form, and the student is said to fit or be suited to that particular school form. Ideally, they will be challenged, but not over challenged to the point where school becomes too stressful and they lose their motivation because of their inability to perform up to the required level.

For students who have difficulty performing at the required level in the school form to which they have been tracked, there are two socially acceptable options: repeat a year or transfer to a less challenging school form. If a student's difficulties are moderate and appear to be surmountable, teachers will recommend that the student repeat the year. Because indicators of achievement, such as year-end subject grades and exit exams, are important for entrance into further educational and vocational programs, teachers, parents and students recognize the importance grade retention plays in allowing students a second chance to perform up to the required level. A second option exists in the form of school transfer. Many students see transfer to a less difficult school form as leading to the same opportunities (or at least the ones they are interested in) and choose to transfer to a school form in which they can achieve good grades.

One of the primary effects of this highly differentiated tracking system is that most students complete their secondary education between the ages of 14 and 19, depending on the school form into which they are tracked. Those that are enrolled in the *Hauptschule* and the *Realschule* (or combined *Haupt/Realschule*) complete their lower secondary education between the ages of 14 and 16, and those that pursue the *Abitur* at a *Gymnasium* or *Berufliches Gymnasium* usually complete their *Abitur* at 18 or 19. Approximately 30 to 40 percent of the student population studies for the *Abitur*, and the majority of these students continue their studies at a university. Therefore, educational and vocational choices for these students are deferred until their late teens and career advising for this group focuses heavily on the university system.

In contrast to students attending the *Gymnasium*, future educational and vocational opportunities become important considerations during the early adolescent years of students enrolled in the *Hauptschule* or *Realschule*. Career planning and advising begins as early as the seventh or eighth grade for these students. By the end of their 9th or 10th year of school, they are choosing an upper-secondary level vocational or educational path, which will lead to a lifelong profession. Only a small percentage of these students will go on to obtain the *Abitur* and enter a university. Despite this, mathematics and science courses are considered basic to a good general education and are required subjects for all of these students.

Although the differentiated system forces educational and vocational choices at a very early age for the majority of youth in Germany, it also works to prepare them for a profession. Upper-secondary vocational programs and technical education programs provide instruction specific to their chosen profession, often in combination with core academic subjects, and successful completion of one of these programs results in a certificate qualifying them for employment.

Social and economic pressures in German society are forcing some accommodations in the differentiated school system and in teaching methods, as students entering the school system in recent years have come from a broader range of cultural backgrounds and home environments. There has been an increase in the number of single parents of school age children as well as an increase in the number of families where both parents work outside the home. Teachers have indicated that an increasing number of students

lack afternoon supervision as a result of these changes and that the corresponding lack of parental attention and homework assistance are affecting students' motivation, concentration skills, and their willingness to learn, even in the *Grundschule*. In addition, a large increase in the number of non-Germans living in Germany and attending the public schools has meant that teachers have encountered an increase in learning problems caused by language difficulties and cultural differences.

At the same time, recent economic conditions have led to changes in the perceived value of the various secondary school completion certificates, and this has led to a change in enrollment patterns. As minimum employment qualifications have risen for many jobs, parents' concerns about their children's prospects for future employment have led them to view the *Abitur* and the *Realschule* certificate as providing a greater variety of educational and vocational options. As a result, there have been more students tracking to *Gymnasien* and *Realschulen* and fewer tracking to *Hauptschulen*, and there has been a corresponding decline in the value and status of the *Hauptschule* certificate. Teachers stated that while the lowest performing students are remaining in the *Hauptschule*, the range of level of ability among students at both the *Realschulen* and the *Gymnasien* is becoming greater.

In recent years there has been a movement to integrate children with disabilities into *Grundschulen*. However, the majority of children with disabilities continue to be educated in *Sonderschulen*, which are specifically designed for students with behavioral, physical, or learning disabilities. Many of these students receive either the *Hauptschule* or *Realschule* certificate within the *Sonderschulen* system, and a smaller number continue on to study for the *Abitur*.

Children who are considered gifted are educated within the traditional school system but do not receive supplemental classes or opportunities. They are tracked into the *Gymnasium*, the most difficult of the three secondary-level schools and are thought to be challenged adequately within this school form. The variety of *Gymnasium* in large cities often offers these students an opportunity to select among the most academically rigorous schools.

Parents, teachers and students indicated that they are generally satisfied with the educational system and the opportunities it provides. The differentiated school system is seen as providing students with an education appropriate to their level of ability and allowing for some flexibility of movement and alternative school forms (in some states) for students who are late bloomers.

Chapter 4

The Role of School in German Adolescents' Lives

By: Mark F. Milotich

At 7:30 a.m., the subway car is filled with students on their way to the *Gymnasium*. There is a lot of commotion, laughing, and yelling. Many of the boys are standing in the aisle, horsing around. Girls are mostly sitting down chatting with one another or flirting with the boys. Students are dressed in the latest fashion: T-shirts or sweatshirts with English logos, baseball caps worn backwards and jackets from the L. A. Raiders. Most have a well-worn leather school bag at their side.

The subway comes to a stop and the student's pile out, the chatter getting louder. Students break up into small groups along the 5-minute walk from the station to the school. Most reach the school 10 minutes before they need to be in class and use the time to roll a cigarette. There's no smoking inside, but in the schoolyard it seems almost everyone is smoking and talking to friends. A bell rings and the students casually enter the building. A teacher in the doorway urges them in a friendly way to hurry a bit. Suddenly, the yard is empty and quiet. The school day has begun.

Introduction

Methodology

Over a period of 3 months, I examined the role of secondary school in the lives of German adolescents. Schools visited included *Gymnasien*, *Hauptschulen*, *Realschulen*, *Gesamtschulen* and vocational schools. In total, 23 students were interviewed at 12 schools in 3 cities. In addition to the student interviews, the research consisted of interviews with teachers, parents, and principals as well as classroom visits and observations of students in school, at home, and in public. Of the interviews conducted, 17 were at academic high schools (*Gymnasien*), 11 at vocational high schools (*Berufsschulen*), and 28 at lower secondary schools (*Hauptschule*). A total of 30 classroom and general observations were included in the data. Most interviews were held at school in available classrooms or in the principal's office. Several parent and student interviews

also took place at the family home or at the workplace. Student interactions with one another and with teachers were noted during class, mostly in mathematics and science. In addition, students were observed in the school hallways, cafeteria, and at informal meeting points before and after school.

I conducted all of the interviews on the topic of adolescents' lives at the primary site, Central City, except for a few interviews at a vocational high school conducted by a German research assistant. Ute Milotich, Mark Ashwill, and William Foraker collected the interview and observation data relevant to the topic of adolescents' lives during their visits to the schools in the secondary sites, East City and South City. Eighteen of the interviews pertaining to this topic were held in East City and 8 in South City. These data were included in the analysis and are reflected in this chapter. Printed information from schools, career-counseling centers, state ministries of education and their affiliated research institutes, and the Conference of Ministers of Education was also integrated into research findings in this chapter.

Most students interviewed were in the 8th and 12th grades. In some cases, students volunteered to be interviewed when I visited their class. However, in many cases it became apparent that the two elected class "speakers" were the first to volunteer themselves. These students, due to their generally outgoing nature, were very forthcoming and probably more forthcoming in their answers than other students would have been. In other cases, the school principal or teachers asked students to participate. Thus, the sample of students was not—and probably could not have been—random. It seems very unlikely that shy students, slow learners, or students with poor social skills would have consented to be interviewed. Somewhat compensating for this problem was the fact that the full range of students were also encountered in observations and informal interactions both at and after school.

Parents interviewed were, in many cases, parents of the students interviewed at each school and thus were not a random sample. Often, parents were invited by the school principal to participate in the study because of their active involvement in school activities. Parents showed interest in the study and in the United States educational system in particular as well as in the "researcher from America," as I was often introduced by the principal.

Parents held a wide range of occupations. Most parents were also asked about the occupation of their spouse. Of the men, six were business managers or other professionals (doctor, journalist), four were engineers, three were skilled laborers (electrician, toolmaker, mechanic), one was a semiskilled laborer (airport baggage worker), and one was a civil servant. Over half of the women (10) identified themselves as homemakers (including those who had careers earlier), 2 were teachers, 2 were office assistants, 1 was a business manager, and 1 was a nurse. Fathers of students at the *Gymnasium* and vocational school were more likely to be employed in business, engineering, or technical fields. Fathers of *Haupt/Realschule* students were more likely to be in skilled or semiskilled labor professions. Mothers of students at all school types were equally likely to be homemakers.

Although participation was voluntary, in many cases interviewed teachers were selected by the principal and encouraged to take part in this study. These teachers all taught at least one of their major subjects in the natural sciences or mathematics; the most common combination was math and physics. They had an average age of 45–50, and an average of 22 years teaching experience. The large majority of teachers appeared relaxed and enjoyed discussing the role of school in adolescents' lives. Several teachers philosophized about youth, society, and education long after the scheduled interview had ended and the cassette recorder had been turned off. Many were also quite knowledgeable about the United States school system. However, several teachers were critical of the research goals and hesitant in answering questions that I posed.

The primary questions investigated in this study included adolescent time use at school and in other activities, attitudes towards school and education, the transition from secondary school to employment or higher education, and the influence of external factors such as family, peers, and society on adolescent development and school achievement. Under time use, specific topics included school schedule, homework and extracurricular activities, and time spent in leisure activities, with peers or family, or at work. Adolescents' attitudes about education were also examined, in particular, the social role of school, students' motivation to succeed, and their likes and dislikes about school and teachers. The transition from school to work or higher education considered sources of information about careers, vocational decisionmaking, the "dual system" of apprenticeship and study, and university programs. Lastly, I investigated external influences on adolescent development, including parental involvement, peers, the media, unemployment, and violence in society and at school.

Time Use

At 6:45 a.m. on Tuesday, Andreas Feldmann rolls out of bed, takes a shower and pulls on his clothes in a hurry—a T-shirt, an Oakland Raiders sweatshirt, stylishly torn jeans and a pair of tennis shoes. Grabbing his leather school bag by the door, he runs to the subway stop down the street, where he meets his friend Martin who is headed to the same *Realschule*. They greet each other informally and talk about the soccer game from the night before. By the time the 7:25 train arrives at the stop, it is already crowded with students, and Andreas and Martin have to squeeze into the standing area. Ten minutes later at school, Andreas and his friend go to their classroom on the second floor.

Students are already in the classroom and several boys call out to Andreas and Martin as they come in. The first period is German, and Frau Riemann arrives to teach at 7:45. She calls for order, and the last few students drift in and find their seats as she starts writing discussion points for the day on the board. Andreas takes out his small leather bag full of pens and a thin notebook to write in.

At 8:30, German is over and Frau Riemann leaves for her next class. Students talk and joke while they wait for Herr Mayer, who will teach math during the second period. Today, Herr Mayer is introducing single-variable algebra. He goes over the homework from the night before, calling on students who raise their hand to give answers. When Andreas' friend Martin gets an answer wrong, Herr Mayer makes a quick joke about it and moves on to the next person. Andreas tries to avoid being called on because he forgot to do his homework the night before. When the bell rings, Herr Mayer finishes giving the homework assignment, and the students talk as they go out to the courtyard for the 20-minute break. Andreas brings his cheese and bread snack with him, huddling up with two of his classmates as they talk excitedly about the soccer game between FC Bayern and Düsseldorf the night before. "Did you see the final shot. . . . Isn't Number 18 great. . . . " The courtyard is full of students aged 11 to 16 running, shouting, or talking. Before going back inside, Martin rolls a cigarette, which the three friends share as their talk turns to the upcoming "practicum," a 2-week internship that starts the next week. They realize that the break is over when they see the other students heading inside, and they make their way back to the classroom. The next subject is biology, and the enthusiastic young biology teacher, Frau Schulz, is everyone's favorite.

The rest of the day consists of English, history and chemistry, broken up by another 20-minute break at 11:10. After sixth period ends at 1:15 p.m., Andreas and his friends pack up their things and head home. Andreas' mother has lunch waiting on the table, and she and Andreas' two younger sisters sit down with him for the main meal of the day. After lunch, Andreas changes into his soccer clothes, packs his bag and rides his bike to the nearby sports club for soccer practice.

Arriving back home at 5:00 p.m., he makes himself a snack in the kitchen and then goes to his room to look over the materials he was given by the representative from the labor office for his "practicum." He wanted to work in a bank, but had trouble finding an employer who was interested, and is now scheduled to work in an import-export office for the 2-week period. Dinner with the whole family is at 7:30 p.m., and Andreas' father asks him how things are going in school. Although he is having some problems in math, Andreas says that everything is going fine, and his father, a master electrician, goes on to ask him about his upcoming practicum. He presses his son on a vocational decision: What do you want to do when you finish your *Realschule* certificate? Andreas says he's not sure yet and tries to change the subject.

Martin calls at 8:30, and they talk about their plans for going to the disco on the coming weekend. Martin prods his friend on the subject of Britte, a girl they both know who has been flirting with Andreas lately. At 10:00 p.m., after doing homework for half an hour, he goes to bed.

The typical student gets up between 6:00 and 7:00 a.m., eats breakfast at home and travels to school on foot, bicycle, or public transportation, such as bus or subway. Separate school busses are not common and very few students drive a car to school. School usually begins between 7:30 and 8:00 a.m. and lasts until 1:00 p.m. The large majority of secondary-school students in Germany come home after school and eat a

warm meal, which is often the main meal of the day. Most students do their homework in the afternoon, often following a short break after lunch when they listen to music or take a nap. Students also said they often went shopping, played sports, or just "hung out" with their friends in the afternoon. A lighter meal is typically eaten together with the entire family in the early evening between 5:00 and 6:30 p.m. Students spend time on various leisure activities in the evenings, depending on their interests.

The most common leisure activities are watching television, listening to music, or going out with friends to the cinema or to a café. Several male students also said they spend time "playing" with their computer. Most students under the age of 18 go to bed between 10:00 and 11:00 p.m. Older students often spend more time with friends or their boyfriend or girlfriend both during the school week and on the weekend. On weekends, German adolescents of all ages spend significant amounts of time with peers.

The adolescents I talked with demonstrated a pattern of time use similar to that revealed in previous studies. According to a 1992 survey of over 4,000 German youths aged 13 to 29, adolescents spend about 35 percent of their day at school and on school-related activities such as studying on their own. They spend another 33 percent of their time in leisure activities such as socializing with friends, playing sports and games, watching television and listening to music. The remaining 32 percent of adolescents' time is spent either working, in activities with their family, or in personal maintenance (Fischer 1992).

School

There is considerable variation in the amount of time students spend at different types of secondary schools. Students at the *Gymnasium* and those in an academic track at the *Gesamtschule* often attend up to 35 class periods of 45 minutes each every week. Students at the vocational *Gymnasium* spend the most time in class, because these students take subjects such as vocational studies and economics in addition to subjects in the regular *Gymnasium* curriculum. Several teachers said that it is common for students at the vocational *Gymnasium* to have 40 or more periods of class a week. One teacher at a vocational *Gymnasium* said that he expects his students to "demonstrate a level of commitment similar to that of employees at a large corporation." He calculated that when time for homework, class preparation, and commuting to and from school is added to the time for class attendance, students at the vocational *Gymnasium* spend 60 hours a week on school-related activities. The results of this study imply that students may spend more time in school than the average of 28 hours per week reported in a 1992 survey (Fischer 1992).

In general, secondary school students attend class in the morning only. However, there are several notable exceptions. Afternoon instruction may be offered in grades 11 through 13 (*Oberstufe*) at *Gymnasium* (in the state where East City is located, *Gymnasium* ends after grade 12). Students in the *Oberstufe* are expected to begin preparing for the *Abitur* exam and thus may spend significantly more time in school and on school-related activities. Some *Gymnasien* hold class on Saturday morning instead of

during weekday afternoons. Parents of *Gymnasium* students in the upper grades often said that their son or daughter remained in school until between 3:00 and 5:00 p.m. several afternoons a week. In some cases, students are attending afternoon classes; in other cases, students participate in extracurricular activities with or without a teacher as sponsor. Other schools, such as the *Gesamtschule*, may also be designated as "all-day" schools, where students participate in athletics or other activities several afternoons a week.

Most students do not eat lunch in the school cafeteria. During the school day, there are several short breaks of 15 minutes to a half-hour. Most schools have a small café or kiosk, where students can buy juice, milk, coffee, and snacks, such as sandwiches or sweets, during breaks. However, of all the schools visited, only the *Gesamtschule* had a full-service cafeteria. The assistant principal said that on those afternoons when students stay in school until 3:30 p.m. to work on projects, they can buy a hot lunch in the school cafeteria for about $2.50. The assistant principal proudly explained that the cafeteria was run previously by a private company and sold only about 50 lunches a day. Now it is run by students under the supervision of home economics teachers, and they sell between 150–200 lunches a day at a lower price.

Class schedule. Weekly class schedules from several students highlight the differences between students in different grades and at different types of school. The first schedule (see figure 1) is from an 8th-grade *Gesamtschule* student in an academic track which will lead to the *Realschule*-leaving certificate (*Mittlere Reife*) after 10th grade. Students graduating from the *Gesamtschule* with the Mittlere *Reife* after 10th grade have the option of continuing for the *Abitur* during grades 11 through 13 by attending upper-level *Gymnasium*. This student has more periods of instruction (33) per week than does an eighth-grade *Gymnasium* student (30), reflecting the fact that the *Gesamtschule* student elected to take Latin. Project work in the afternoon consists of teacher-initiated topics on which students of various grade and ability levels work together. *Gesamtschule* students not intending to go on for the *Abitur* could opt for a less demanding schedule by not taking elective subjects such as Latin or French.

In contrast to the *Gesamtschule* student, an eighth-grade *Gymnasium* student (see figure 2) does not have afternoon classes or project work. There are two short breaks during an otherwise nonstop school day which lasts from 7:45 a.m. until 1:15 p.m. German, French and math meet 4 hours a week, English and physical education meet 3 hours a week, and several other subjects meet only 2 hours a week.

It is evident from these schedules that students do not have the same subject at the same time every day. Rather, their schedule normally varies from day to day. For example, in the upper grades (11 through 13), students may have instruction in a particular subject during two consecutive periods, for a total of 1.5 hours, 2 or 3 times a week. Therefore, the schedule of a student in grades 11 through 13 may be more similar to that of a beginning college student in the United States than to that of an American high school student.

In the third example (see figure 3), the 12th-grade *Gymnasium* student has a weekly load of 39 class periods. The student has German and French as advanced courses (*Leistungskurse*), each of which meets for five periods a week. Other subjects meet for two or three periods a week.

Figure 1—Sample class schedule for a student in the eighth grade at the *Gesamtschule*

Time	Period	Monday	Tuesday	Wednesday	Thursday	Friday
7:45–8:30	1	math	student council	social studies	English	chemistry/ biology
8:35–9:20	2	physics	art	English	German	
break						
9:35–10:20	3	German	art	math	career studies	German
10:25–11:10	4	religion	math	Latin/ French*	math	German
break						
11:25–12:10	5	English	English	Latin/ French*	social studies	social studies
12:15–1:00	6	Latin	Latin/ French*			Latin/ French
break						
1:15–2:00	7					
2:00–2:45	8	project activities		gym		
2:50–3:35	9					

*or technology studies

Also notable in this student's schedule is the large number of free periods. Students in upper grades at *Gymnasium* are more likely than other students to have up to three free periods between classes, during which they are not required to remain in school. Several *Gymnasium* students said that they often go home during their free periods in order to study or to relax. This is possible for many students who live within walking distance from their school. Those students who choose to remain in school during free periods will often use the time to do homework or chat with friends in the student café.

Figure 2—Sample class schedule for a student in the eighth grade at the *Gymnasium*

Time	Period	Monday	Tuesday	Wednesday	Thursday	Friday
7:45–8:30	1	French	music	German	physics	math
8:35–9:20	2	German	French	French	biology	music
break						
9:35–10:20	3	math	German	physics	sport	German
10:25–11:10	4		math	biology	English	French
break						
11:40–12:25	5	English	history	gym	chemistry	English
12:30–1:15	6	history	geography			geography

Extracurricular activities. Extracurricular activities range from musical and theatrical groups to sport clubs, political groups, and student council. Although the number of extracurricular activities offered is large, students and teachers who were familiar with the United States school system remarked that German secondary schools do not offer the same range and extent of extracurricular activities as do U.S. high schools. For example, a student in the eighth grade at a vocational *Gymnasium* said that what she liked best about her year as an exchange student at a high school in the United States was the wide offering of extracurricular activities at the school. Almost all students and teachers felt there should be more extracurricular activities available at German schools, which have been described as being first and foremost, academic institutions (Petersen, Leffert & Hurrelmann 1993). Several teachers at *Haupt* and *Realschulen* said they would like to introduce more extracurricular activities at their schools, but they lack the financial and human resources to do so.

Lack of student interest can also be a limiting factor in the extent of extracurricular activities offered. For example, a vocational *Gymnasium* student said that her school offers student groups in theater, choir, and band but few students attend the rehearsals, so that the activities "really only exist on paper." Another *Gymnasium* student expressed a similar opinion regarding student council. He said that the most frustrating aspect of being a member of student council is the fact that "hardly any of the other students are interested in what we are trying to do."

Figure 3—Sample class schedule for a student in the 12th grade at the *Gymnasium*

Time	Period	Monday	Tuesday	Wednesday	Thursday	Friday
7:45–8:30	1	geography	history		French	chemistry
8:35–9:20	2					
break						
9:35–10:20	3	math	German	Religion	English	social studies
10:25–11:10	4					
break						
11:40–12:25	5		French	Biology	German	Latin
12:30–1:15	6					
1:20–2:05	7	English		Art	math	history
2:10–2:55	8	German			biology	French
break						
3:10–3:55	9	chemistry		Gym		
4:00–4:45	10	Latin				
4:50–5:35	11	social studies				

While some sports activities are offered, German secondary schools usually do not sponsor a system of intramural or interscholastic sport teams. This is not to say, however, that German adolescents do not participate in organized sports. Rather, most sport activities take place outside the school context. Instead of playing on a varsity or junior varsity school team, adolescents may participate in community-sponsored clubs and sports leagues after school (Petersen, Leffert & Hurrelmann 1993).

Extracurricular activities are typically organized as "project groups" (*Arbeitsgemeinschaften*) or AG for short. Common AGs offered at most schools are choir, band, theater, photography, newspaper production, basketball, and soccer. However, depending on student and teacher interest, a school might also sponsor political or cultural AGs. For example, an eighth-grade *Gymnasium* student said that he belongs to a Germany-Romania Cultural Exchange AG, a group set up to foster cultural awareness and academic exchange between the two countries. The creation of this AG

was based on student initiative. According to a survey by Baumert and Leschinsky, the average school offers between 3 and 4 AGs, although a good 15 percent of schools do not offer any. The extent of extracurricular offerings also varies according to school type and size. *Gymnasien*, on average, offer 7 AGs, followed by *Gesamtschule* with 5.5, *Realschulen* with 5, *Hauptschulen* with 4, and *Grundschulen* with 3. In general, the larger the school, the more AGs offered (Baumert & Leschinsky 1985, p. 18).

Several teachers mentioned the value of extracurricular activities in promoting teamwork and social education. For example, a *Gesamtschule* teacher said that schools need to organize more outdoor excursions, such as sailing or hiking, during which the students can learn social skills needed outside of class. He believes that this kind of "outdoor education" can help teach students to respect each other and to work together as a team.

Gymnasium teachers offered the only notable exceptions to the general enthusiasm for extracurricular activities. Several of these teachers lamented what they viewed as declining academic standards at the *Gymnasium*, and, in the case of one teacher, explicitly placed the blame for this decline on the prevalence of extracurricular activities:

> If I were the principal at a *Gymnasium*, I would try to introduce more concentration on the academic subjects—math, science, German, foreign languages and pay less attention to extracurricular activities like student exchange programs. I find that these programs detract from the main purpose of the *Gymnasium*. When many activities occur at the same time, they take kids out of the classroom and therefore hinder learning. . . . we need less activities to keep the kids 'entertained,' at least at the *Gymnasium*. Of course, those other activities are fine, but they shouldn't occur at the *Gymnasium*. The *Gymnasium* shouldn't become a *Gesamtschule*.

Homework. In addition to time spent in classes and during extracurricular activities, students spend a significant amount of time on homework assignments and studying for tests. Many students said they spent between 1 and 2 hours on homework per day during the school week. As an average figure, this confirms the results of a 1992 survey, in which German adolescents reported studying outside of school an average of 7 hours a week (Fischer 1992). However, there was a large variation in the responses of students at different types of secondary schools. *Gymnasium* students in the upper grades spend the most time on homework and studying for tests outside of school, typically between 2 and 3 hours per day. Also, it is common for *Gymnasium* students to study for several hours on Saturdays. While *Gymnasium* students frequently said they felt burdened by the amount of time they needed to complete homework and prepare for tests, teachers at the *Gymnasium*, in contrast, shared the opinion that students do not do enough work at home.

During the 6 months before the *Abitur*, *Gymnasium* students in the 13th grade (12th grade in some states) are especially busy preparing for the upcoming exams. One student said that teachers sometimes offer students in their advanced courses additional opportunities for study and review outside of school. Teachers may host weekend excursions where they conduct intensive review sessions in preparation for the *Abitur* examination. However, this is not necessarily the case at all *Gymnasien*. Most *Gymnasium* students said they prepared for the *Abitur* exams on their own or with the help of a few friends. The mother of a *Gymnasium* student in the 13th grade said that her daughter hardly has any free time. Rather, she must concentrate on preparing for the *Abitur* and on doing well in her courses. Since the beginning of the school year, her daughter has spent all day Saturday in her room preparing for the *Abitur*. Most *Gymnasium* students in the 13th grade said that they plan to begin intensive preparation for the *Abitur* in January of the 13th grade, about 6 months before they take the examination.

Parents of *Gymnasium* students were often impressed by the extent to which homework occupies their children's time. One father admitted that *Gymnasium* students in the 1990's do a lot more homework than he did as a student in the 1960's. However, parents sometimes misinterpret the time their children spend alone in their room as time spent doing homework. A 12th-grade *Gymnasium* student sheepishly admitted that he did "almost no homework." While his parents think he is doing homework, he said he is in his room "playing with the computer."

Students at the *Haupt/Realschule* and *Gesamtschule* have considerably less homework than do *Gymnasium* students. Students said that their daily homework assignments ranged from "none at all" to "an hour at most." Most teachers confirmed these responses and complained that their students do not do enough homework. According to one combined *Haupt/Realschule* teacher, students only spend an average of 15 minutes a day on homework.

Not all teachers believe that students should do more homework. Teachers and administrators at a *Gesamtschule* said that they deliberately assign very little homework. Their opinion was that since their school is an "all-day" school, ample time exists during the school day to complete practice exercises. The most students might have to do at home is to finish a few math problems if they require more time than other students. The argument was even made by one teacher that assigning extensive homework is unfair, because some students have the benefit of help from parents or siblings while others do not.

In fact, in some states the maximum amount of homework that can be assigned is stipulated by law for students in 1st through 10th grades. For students in the upper grades, however, there is often no legally specified maximum. For example, in Central City, teachers said that the maximum amount of time allowed to complete all assigned homework ranges from a half-hour per day for *Grundschule* students up to 2 hours for 10th-grade students. In reality, however, teachers, students and parents emphasized that the amount of time most students spend on homework is far less than the legal

maximum. A *Gymnasium* teacher said that her seventh-graders were surprised and resistant when she told them that she planned to assign between 1 and 2 hours homework each day. Most of the students were used to doing less than a half-hour of homework. However, many students, especially in the upper level (*Oberstufe*) at *Gymnasium*, do have free periods during the school day when they can partially complete their homework assignments. One student said that he finishes assignments, which teachers think will take 2 hours to complete, in 45 minutes during a free period. "So far," he added, "my grades haven't suffered because of it."

Out-of-school instruction. Although teachers claim that private preparatory courses for the *Abitur* and other formal examinations are gaining in popularity, student attendance of academic classes outside of school is still uncommon. No student interviewed said he or she was enrolled in such a course. The statement heard most frequently was that extra preparatory courses are not necessary as long as a student works diligently on his or her own towards exam preparation. However, peer-tutoring groups do exist at most schools, as do professional organizations staffed by paid tutors, which offer their services to students for a fee.

While examination prep courses are uncommon, courses in German as a second language are a common form of out-of-school instruction for foreign students. Although schools with a high percentage of foreign students may offer supplemental German instruction in school, many local organizations, such as the chamber of commerce, offer additional language courses for people of all ages. A teacher in a *Haupt/Realschule* with a high percentage of foreign students said that many of her students regularly attend these courses.

Students of different ethnic backgrounds may also be enrolled in after-school courses in religion, culture and language. For example, many Muslim students attend "Koran school" in the afternoon, where Islamic religion and Arabic language are taught. Very often, in neighborhoods with a high percentage of foreign families, these courses are taught in the same schools the children attend during the day.

Additionally, several students said that they are enrolled in private ballroom dance courses or are taking private music lessons. The percentage of students who said they are taking such classes is considerably higher (15–20 percent) than the national average of around 4 percent of adolescents aged 10–19 who are enrolled in nonacademic classes, such as music or ballroom dancing at a given time (*Statistisches Bundesamt* 1993). It is common for German adolescents to take a ballroom dance course of several months in duration. In fact, many families consider this instruction to be a necessary part of a young person's "cultural" education.

Leisure

Next to school and school-related work, leisure activities account for a major portion of adolescent use of time. Discothèques, cafés and bars are important components of youth culture in Germany. These are the contexts where young people come together, meet

their boyfriends and girlfriends, socialize with friends, and listen to the latest music. School is not the primary focal point of adolescent social life. Teachers mentioned that the sense of "being at home" in school is missing in German schools.

Peers and friends. When asked what they did in their leisure time, adolescents usually said that they "hung out" with their friends. When I probed further, they said that "hanging out" usually meant going to the discothèque, bar or café, shopping, or playing sports. As might be expected, students in the 12th grade more often go to a bar or discothèque with their friends, whereas 8th-grade students often play sports with their friends. The legal drinking age in Germany is 16 (driving age is 18), and therefore bars often cater to a young crowd. Since it is unlikely that the bartender will check the age of adolescents coming to the bar, youths as young as 14 or 15 also reported going to a bar or discothèque with their friends. A teacher at a *Haupt/Realschule* said he has an 11-year-old student who regularly goes to a local discothèque.

Several teachers and parents complained that young people seemed to have a lack of interest in creative or athletic endeavors, such as playing a musical instrument or riding a bicycle, preferring instead to hang out on the street corner or wander aimlessly through the city. For example, one *Haupt/Realschule* teacher said that many of his students would rather stand on their street corner instead of riding bicycles in the countryside. "They want to be where the action is." Parents said they thought the city or state should sponsor more youth clubs to keep young people busy. In contrast, teachers believe that adolescents are simply not interested in the youth clubs that do exist. One *Gymnasium* teacher said that she often sees students hanging out in front of the neighborhood youth club for hours, doing nothing in particular.

In some cases, the school is used as a meeting place for young people who are not allowed to bring their friends home. This was the case at a *Haupt/Realschule* in Central City, which is open until 6:00 p.m. every day, although class ends at 1:00 p.m. for most students. Observation of the school lobby at 5:30 p.m. on a Friday afternoon confirmed teachers' assertions that the school is used by students as a meeting place—several girls were sitting at a table chatting and three boys were kicking a soccer ball around in the lobby. Outside, many more students were yelling and playing. At 6:00 p.m., the school custodian rounded up the students who were still in the building and sent them on their way home so that he could lock the doors. The custodian said there are almost always students at school when he closes at 6:00 p.m.

Teachers stressed that many students are not allowed to bring friends home with them. This is especially likely to be the case for foreign students, who may live in crowded apartments with little room for guests. One teacher said that Turkish girls were especially likely to stay in the school in the afternoon rather than going home right away, because school is "the only place where they can meet boys." In contrast to this *Haupt/Realschule*, however, schools in other cities did not appear to serve as an after-school meeting place and playground for students.

Many adolescents said they belonged to a "clique." However, in many cases it was unclear what students meant by clique. Definitions varied from a large group with a common ethnic identity, such as Portuguese or Moroccan students, to a small group of three or four friends who go to pubs or play basketball together. Membership in a clique is an important aspect of adolescent social life and time use, especially in western Germany, where 68 percent of youths surveyed in a 1993 study claimed to belong to a clique. In eastern Germany, in contrast, only 31 percent of youths claimed clique membership (Bundesministerium für Frauen und Jugend 1993).

As an example of a small "clique," an eighth-grade *Gymnasium* student said he belonged to what he called the "Dortmund Fans" clique. He and a few friends are fans of the Dortmund soccer team and travel together to matches, wear Dortmund scarves, and generally identify themselves with the team. This provides the group with a special identity, especially in the area where they live. As this student said, "Everyone is a fan [of the Central City team], but we are a small clique, the Dortmund fans. It's cool to be different."

However, not all cliques are as harmless as the Dortmund fans. Several teachers mentioned that there are cliques, which are more like gangs in that they are known for vandalism and robbery. A *Haupt/Realschule* teacher said with sarcasm that very often what is called a "multicultural" society is in reality a "multicriminal" society. A second teacher from the same school said that a group of students from her school is known to shoplift at a local department store. However, she preferred to call these groups "loose bands" rather than cliques.

Romantic relationships. The large majority of adolescents were quick to stress that they have a boyfriend or girlfriend with whom they share some of their leisure time. However, upon further questioning, it often became evident that the boyfriend or girlfriend was really part of a group of friends who all went out together. This was especially true for eighth-graders, which were unlikely to have an exclusive or particularly close romantic relationship. "Boyfriend" or "girlfriend" is probably the wrong expression in this case. The German language is ambiguous in this regard, since there is no distinct word for "boyfriend" or "girlfriend." Rather, a girl will use the same word *Freund* to denote a male friend or her boyfriend. She might, however, say "my" friend to refer to her boyfriend and say *a* friend to refer to any male friend.

Twelfth-grade students were more likely to have a steady partner than were 8th-grade students. Students with a steady partner often spend much or even all of their leisure time with their partner. In general, adolescents take part in the same leisure activities with their boyfriend or girlfriend as they do with their other friends, such as going to a bar or discothèque. In contrast to students who have a steady partner, students who are without a partner do not often go out on "dates." Rather, they are more likely to go out with a group of friends, which may also include potential boyfriends or girlfriends.

Several *Gymnasium* students who were over 18 years old said that they stayed at their boyfriend or girlfriend's apartment on the weekend. No student at the *Haupt/Realschule* or *Gesamtschule* said that he or she spent the weekend at a partner's apartment. In some cases, however, students' preciousness regarding boyfriends and girlfriends was notable. For example, an 8th-grade *Gymnasium* student somberly told me that "the biggest problem for a 13-year-old" was "love." He went on to say that he has already had four different girlfriends, but "none of them worked out." Currently, he is "happy to be single again."

Sports and other clubs. Sports are the most common type of organized activity in which adolescents take part. Most students said they belonged to a neighborhood or community-sponsored sport club (*Verein*). The large majority of students at all types of secondary schools play at least one sport, the most common being soccer for boys and volleyball for girls. Club membership is important, because it is often difficult to find space to play a sport without belonging to a club. German schools often lack extensive grounds and sport fields; therefore, in order for a group of German teens to play soccer, most likely they must first join a soccer club.

Discussions with students supported the results of previous studies. In a 1992 survey, between 70 to 80 percent of German adolescents said they participate in sports regularly. Girls were slightly less likely to participate in sports than were boys. In 1992, 75 percent of surveyed boys under age 15 were members of the German national sport league (*Deutscher Sportbund*), which is the national parent organization for local organizations, which sponsor particular sports. In comparison, 62 percent of girls under 15 years old, 49 percent of boys between 15 and 19, and 32 percent of girls between 15 and 19 were members of the national sport league in 1992 (Fischer 1992).

Music, videos, and computers. "Techno music" is the music style currently in vogue with German youth. Techno music is fast, loud, and electric. It lends itself easily to free-style dancing popular at discothèques. Boys were more likely than girls to identify themselves as "techno fans." Several students also mentioned that going to "techno" discothèques is often combined with use of the drug "Ecstasy." However, there is a growing movement by various youth groups to remove the association between techno music and drug use. A recent gathering of 60,000 techno fans in Munich demonstrated with the motto "yes to techno, no to drugs" (*Techno ja—Drogen nein*). ("Sechzigtausend Techno-Fans mit lauter Musik gegen Drogen" 1995).

While the large majority of adolescents said that they listened to techno music, other kinds of music are also popular. Several students said they preferred jazz, especially when they want to relax. One girl of Turkish heritage said she listens to Turkish pop music because she understands the meaning of Turkish songs better than English or German songs. Most adolescents listen to British or American pop music. Favorite bands in Germany are often the same as those in the United States, a fact which was reflected in the fashion worn by many of the students, (e.g., T-shirts from groups such as U2, Nirvana, R.E.M., Metallica, Ice T, and Bon Jovi).

In addition to music, teenagers spend a considerable amount of time watching television or videos. The music channel, MTV, is available through cable, as is its European counterpart, VIVA. These two music channels are the favorite television programs watched by eighth-grade students. Many older students at the *Gymnasium* said that they did not watch much television, preferring instead to go to the cinema with friends. Rental videos are also common, and many students said they watched several videos each week.

Lastly, several students said they spend much of their free time "playing" with their computer. Most of the adolescents who use a computer during their free time were male students at the *Gymnasium* or vocational school. Teachers also noted that many students often spend enormous amounts of time in front of their home computers. In some cases, parents buy their child a computer thinking that it will help the student study and learn. However, instead of using the computer as a study aid, several teachers said that students more often use their computer to play video games.

Employment

Only a small percentage of students said working occupied much of their time while attending school. The older a student is, however, the more likely it is that he or she might be working. Rather than working while school is in session, it is more common for secondary school students to work either part time or full time during school vacations. In general, working while attending school is not encouraged by parents and teachers. The mother of an eighth-grade *Gymnasium* student was somewhat surprised by the question of whether her daughter had a part-time job. Her response made it clear that she believes her daughter's role as a teenager is "to be a student, to do her homework, and to socialize with her friends." This sentiment was echoed by parents of students at other school types, as well. Teachers also spoke disparagingly about their students taking part-time jobs:

> I think it is a mistake for kids to take a part-time job during the school year. It's OK to work during vacations, but I think that they should concentrate on school during the week. Families should provide their kids with pocket money, so they don't have to work. Of course, we have kids from all social classes in this school, so this isn't always possible. (*Gymnasium* teacher)

Although most teachers shared this opinion, some were more supportive of students working. In fact, a second teacher from the same *Gymnasium* said that he thinks it is instructional for students to work during school vacations in order to get a taste of the "real world." He stressed the benefit of the worldly experience that students gain by taking hourly jobs in factories during school vacations: "Factory jobs teach students better than anything else the importance of getting a good education."

The discussions generally confirmed previously reported statistics on adolescent employment. In a 1992 survey, 19 percent of adolescents polled said they had a part-time job during the school term. Those who did have a job said they worked an average of 9.5 hours per week (Fischer 1992). The discussions also served to illustrate the patterns of work among students. Several students said they worked part time during the school term. However, in most of these cases the student was employed at a family enterprise of one kind or another. For example, an 18-year-old *Gymnasium* student said he works up to 10 hours during the school week in his father's grocery business. Similarly, other students work in family-run bakeries, hotels, cafés, or retail stores. In addition, many students in the upper grades work during school vacations, where again the most likely place of employment is a firm where a parent is employed.

Students at the vocational school are employed part time, as a rule, since apprenticeship employment is an integral part of their vocational school experience. This pattern of vocational training through simultaneous work and study is known as the "dual system" in Germany. Adolescents participating in the dual system work part time as apprentices and attend vocational school during the remaining time.

In contrast to students at the vocational school, students at the vocational *Gymnasium* do not work as apprentices. However, teachers at the vocational *Gymnasium* stressed that their students are "vocationally oriented" and therefore "realize the value of practical education." One teacher said that although his students may spend between 50 and 60 hours a week on school-related activities, many still choose to take on part-time jobs to gain real-world experience. In particular, students in areas such as computer technology, electronics, or applied math may succeed in finding high-paying, part-time positions with companies, which are eager to "snatch up the latest ideas." A vocational *Gymnasium* teacher said proudly that he has had several students who successfully founded their own computer software business while attending school. He considers this kind of experience to be the essence of a solid vocational education and therefore encourages students at the vocational *Gymnasium* to find meaningful part-time employment while they are in school.

Family

Students spend varying amounts of time with their families. Girls often said they have a "close relationship" with their mother, routinely sharing what is happening in school and in their personal lives. Boys were less likely to say that they tell their parent(s) about personal issues; however, they are as likely as girls to keep their parents up to date on their school progress and performance. Common family activities are going shopping, talking, and eating together. The mother of a 14-year-old daughter in the eighth grade at a *Gesamtschule* stressed that the family meal is a forum where concerns can be discussed and problems are often solved. She said that the expression "quality time" makes no sense to her—she believes that any family time can be quality time, it is only important to listen and observe one's children. "Communication is the key to a healthy family," she said.

However, after talking to students, it became clear that in many cases precisely this type of communication is missing in family homes, especially between boys and their parents. Boys very often said that when they were at home, they "hung out" in their room, listened to music or played with their computer, without spending much time interacting with their parents. During interviews with parents and students from the same family on separate occasions, I noticed that parents often do not have a clear understanding of how their child spends his or her time.

Teachers stressed that poor communication comes from both sides: sometimes adolescents do not share their experiences and concerns with their parents; in other cases, parents do not take the time to listen to those concerns or to be interested in their child's experiences. Several teachers asserted emphatically that one of the most serious problems facing adolescents is that their parents are too busy with their own careers and personal lives to invest sufficient time and emotional energy in their children. A *Gymnasium* teacher said that "many parents are trying hard to maintain their level of material success at the cost of neglecting their children. Children are growing up on their own." Most parents often shared this opinion:

> Parents think their own free time is more important than spending time with their children. They think that their responsibility ends with providing a home and food for their children. Many parents must work 50–60 hours a week and simply do not have the time or energy to raise their children. (mother of *Gesamtschule* student)

Adolescents generally did not mention having to do a significant amount of work around the house. The typical list of chores performed by students includes straightening up their room, taking out the trash, and perhaps, especially for girls, helping their mother in the kitchen. A female *Gymnasium* student in the eighth grade said she does not have a fixed list of chores, but that she sometimes helps her mother with grocery shopping or cooking when she has time. Boys said they have few chores at home. Very few students said that they had a fixed list of chores, such as babysitting for a younger sibling, cleaning, or cooking.

Foreign students. An additional point should be noted regarding families with different ethnic backgrounds. Many of these families have different cultural values concerning the role of the family and the family home. Teachers emphasized that, in many cases, foreign students are not allowed to bring friends home. Family space and time is reserved for the family, and the role of the family in adolescent development may be even greater than otherwise. Many of the foreign students interviewed said they spent their free time with siblings or other relatives. Quite possibly, some students of different ethnic backgrounds feel more comfortable as part of a larger, extended family, which forms a social support network. In some neighborhoods, families of "guest workers" from Turkey, Italy, and Greece as well as immigrant and refugee families from Eastern Europe and the former Yugoslavia form the major part of the community.

Attitudes Toward School and Education

Social Functions and Role of School

In discussing the role of school in adolescents' lives, teachers were quick to point out that schools serve a host of social functions in addition to the education of students. According to teachers, in recent years schools have been obliged to assume an increasingly important and central role in the socialization of youth. Schools must assume responsibility for "raising" children in areas where parents, community, and church once took on a more active role. Teachers at all types of secondary schools said that they are now faced with tasks that were not within the domain of teachers or school only 15 years ago. For example, teachers are now expected to increase AIDS awareness, foster ecological thinking and environmentalism, counsel students on drug issues, keep children up to date on the latest developments in computers and technology, and combat right-wing extremism and racism. Moreover, teachers emphasized that these educational and developmental tasks must be accomplished in a climate where less money is being devoted to education, class size has increased, and students come to school with an increasing number of social, behavioral, and emotional problems.

In some cases, especially at the *Haupt* or *Realschule*, school becomes a second home for students from dysfunctional families:

> The school is a home for the kids. For many, it is more of a home than their parents' house, the families of so many students have fallen apart. Parents have stopped raising their kids. I meet many of my students at the *kiosk* outside where I buy cigarettes in the morning. They are there buying orange juice and bread for breakfast. The kids are sent to school early just to get them out of the house, just so the parents can have some peace. When it is particularly cold out, [the principal] opens the school doors early because there are usually kids waiting outside. (*Haupt/Realschule* teacher)

In other cases, teachers said that they have to teach most students social manners:

> The biggest problem for children today is that parents are no longer teaching their kids values and norms. Many things that are really the parents' responsibility are left up to us [teachers]. The kids come unprepared to school. They haven't learned the most basic manners, such as saying 'Good morning!' The problem is that parents let their children do whatever they want, and perhaps with me, students experience for the first time that they can't do whatever they want. (*Haupt/Realschule* teacher)

Foreign students. In the case of many foreign students, one teacher noted that school often is a place of relative freedom and is therefore a forum for behavior, which is not permitted at the family home. While for many of these students the family home and interactions with relatives play an extremely important role, school is often a "second and more accommodating home." School can serve as an important bridge between the traditional world that foreign students experience at home and the very different world of modern-day Germany:

> School plays a very great role [in students' lives], I think. Because they find their friends here. This is especially important for foreign kids. They often don't go home, even after school is over at the end of the day. This is so above all for Muslim children, especially the girls. Because here they are free. At home they are not allowed to have any friends, and they have to wear a scarf on their head. Here at school there are also boys. That is important. Here everything is not forbidden like it is at home. (*Hauptschule* teacher)

While teachers were quick to emphasize the social functions that school provides, most agreed that the primary role of school remains being an institution, which educates students in the academic subjects. Many teachers said that school was a place where knowledge was "transferred" to students. Students shared this opinion as well:

> I think school is important, because without school we wouldn't know anything. We couldn't even speak, really. But in school the teachers teach us these things. At home, we could never learn these things, because parents are always working. So I think school is important. One has to be able to read and to speak well. One has to be able to do math. (Eighth-grade *Hauptschule* student)

Teachers at *Gymnasien* and vocational schools were likely to emphasize the academic role that school plays in adolescents' lives, in contrast to *Hauptschule*, *Realschule* or *Gesamtschule* teachers, who more often stressed the social or developmental role of school. In particular, vocational school teachers often said that the role of school was to "prepare students for their future professional life." Similarly, *Gymnasium* teachers said the role of the *Gymnasium* was to prepare students for future academic studies and careers. One teacher stressed the role of the *Gymnasium* in preparing tomorrow's leaders in business and government, a sentiment that was echoed many times by parents of *Gymnasium* students. As one said:

> The *Gymnasium* does not serve the wide spectrum of children in Germany. However, I believe every society needs an educated elite, and this elite must have an opportunity to learn as much as possible in school. Every country needs institutions which train the elite for the leadership positions in society.

The mother of two students at a *Gymnasium* likened the role of school in adolescents' lives to the role of a career in adult lives. For example, she said of her daughters: "They go to school, they more or less satisfy the demands placed on them there, they are either happy or not, and everything runs with regularity, just like in a regular job." Parents, teachers, and students themselves, especially at *Gymnasien*, often referred to the role of the secondary school student by using analogies to the world of work. One possible explanation for this attitude is the fact that many adolescents of the same age as *Gymnasium* students in the upper grades are indeed fulfilling vocational roles. Students 17 or 18 years of age in vocational school are concurrently apprentices in a profession and identify themselves as professionals in training. Thus, it is natural for many to think of the *Gymnasium* student in the upper grades as an "academic in training."

Attitudes Toward School

Regarding students' attitudes toward school, a *Gesamtschule* teacher said with irony:

> For some, school is only a burden. For others, it is a replacement for 'home'. For others yet, school is a place to play; however, with unpleasant side effects. And then there are those few students who gladly come to school.

Several students clearly fell into the category of those who "come gladly to school." A *Gymnasium* student in the 13th grade said that what he appreciates most about his school experience, in addition to meeting friends, is the chance to remain a "generalist" in a society which is becoming increasingly specialized. He believes the German education system often produces individuals who are highly trained in one area and ignorant in many others, and he used the common expression "subject idiot" (*Fachidiot*) to describe such a person. He views school as his last opportunity to avoid becoming a *Fachidiot*.

While a large percentage of adolescents said they enjoy school, several students consider school to be a burden in their lives. For example, students in the 12th grade at a vocational *Gymnasium* felt that school was a duty (*Pflicht*). One 18-year-old student said that he was "torturing himself" to stay in school and get the *Abitur* only because he had already invested so much time and energy in school. These interviews would appear to cast doubt on previous reports of adolescent attitudes towards school, such as a 1991 survey in which 87 percent of adolescents said they "felt good in school" (Behnken et al 1991).

Many teachers and parents who were familiar with the U.S. school system said they believe schools in the U.S. do a better job than German schools in fostering a sense of belonging and camaraderie among the students. For example, they said that the fact that many American students and teachers stay in school till 4:00 p.m. or later for sports practice, newspaper, or theater builds a sense of community within the school, not only among the students but among teachers as well.

One *Gymnasium* principal said that his school participates in several exchange programs with U.S. high schools; every year a small group of students returns to the *Gymnasium* after spending the 11th grade at a U.S. school. According to the principal, students who spend a year in the United States generally return with a more positive attitude towards school:

> I've found that the year in America has an impact on how the students talk and think. They have a more easygoing attitude, they are more ready to converse about different subjects, and they have learned how to work with books in a different way, just to mention a few things.

The father of a student in the 12th grade at a vocational *Gymnasium* who lived with his family in the United States for 2 years had similar praise for the United States school system. His children attended one high school in the Midwest and another in a major East Coast city. He was impressed by the positive attitude that his two children had about both high schools, attributing this attitude to the generous offering of extracurricular activities and the nurturing personalities of many of his children's teachers:

> In America, the students' personalities are developed at school; here, the emphasis is on knowledge. School in Germany is too stressful for children. They don't experience enough success at school to feel good about themselves. What I and my kids liked about the American school system was the fact that schools offered many extracurricular activities, such as music groups and sport teams. These kinds of activities provide kids with opportunities to challenge themselves to improve and to experience success from an early age.

Structural aspects of the German school system also affect the attitudes that parents, students, and teachers have about their school. Many teachers supported the system of tracking students from an early age into what has also been called "differently privileged forms of secondary school" (Engel & Hurrelmann 1994). On the other hand, some teachers were opposed to the socially ordained role of school as a means of social and economic "selection" of adolescents:

> The primary purpose of school should be to foster the intellectual, social, and spiritual development of children. That's difficult enough. Teachers do not need the additional task of selection. Life will take care of selection by itself; we teachers shouldn't be required to do it at the *Gymnasium*. (*Gymnasium* teacher)

Motivation to Succeed in School

Most teachers emphasized the importance of the link between school performance and vocational opportunities as a factor in students' motivation to succeed in school:

> It is not school itself that plays the largest role in the students' lives; rather, it is the certificate they get from the school. This will make a great difference in their future lives. This piece of paper will determine which avenues are open to them in the future—whether it is, for example, an apprenticeship in a bank or university studies. (Vocational school teacher)

While efforts have been made in recent years to increase the permeability of the German educational and employment system, overall it remains highly structured and credentialed, and there is a strong incentive for young people to make vocational decisions early and stick to them. Students, teachers, and parents all emphasized the enormous importance of school performance on vocational options, thus agreeing with published statements on the strong impact of course grades and secondary school achievement on the availability of future jobs and vocational training programs (Petersen, Leffert, & Hurrelmann 1993). The perceived link between school and career is therefore very strong for most students. However, in many cases the type of secondary school attended will determine the career options available more than will the grades earned. Sometimes, this can lead to a sense of resignation regarding career, especially for students in *Haupt* or *Realschulen*. Students attending *Haupt* or *Realschulen* are generally aware of their career options and limitations and what kinds of grades they need to earn to achieve their goals. In many cases, students who do not have the required grades for a preferred career path said they would choose a different career rather than struggle to earn better grades. They are also aware that the number of vocational paths open to graduates with a *Hauptschule* diploma is limited.

The perceived link between school and vocation becomes strongest, according to teachers, during the last few years of secondary school. At this point students start to examine carefully options for employment or study-training programs. One *Gymnasium* teacher believes that students only realize the importance of school performance in the upper grades and only then start working hard to succeed in school. However, others disagreed, saying that most students are aware of the link between school and vocational success at an early age. For example, the father of two *Gymnasium* students (in the 8th and 12th grades) said that both of his children are convinced that a good education at school is necessary for their future career success: "They both want to get the *Abitur*. They realize that one has many more opportunities for career choices with the *Abitur*." Similarly, another *Gymnasium* teacher emphasized the strength of the link between school and career, saying that students see school primarily as an opportunity to prepare themselves for a profession and to create an advantageous starting position for their future career.

Many did not share this optimism. Some teachers complained that their students were not aware of the importance of school performance for a future career or, if they were aware, did not seem to care. According to teachers, students at the vocational school are often the least interested and least motivated to succeed in school. This is the case because vocational school students have already chosen a career and are involved in an apprenticeship; often, they do not see the relevance of school to their future careers.

Motivation to succeed in specific subjects. Students pointed to several factors that influenced their motivation in a particular class. The most common reason students gave for not succeeding was that the teacher was boring. While students rarely admitted a lack of interest in a subject as a cause of failure, they were quick to point to "genetics" and "upbringing" as reasons for poor performance in school. For example, one *Gesamtschule* student told me, "I just don't have a head for languages." In contrast, she believed she was talented in science and mathematics and therefore planned to enter a technical profession as a physician's assistant.

In general, students tended to categorize themselves as being good in either mathematics and science or in the humanities and social sciences. Very few students expressed a keen interest in both areas. In one extreme case, an eighth-grade *Gymnasium* student said that he came from a "family of humanists" and actually believed he was "genetically programmed" not to understand mathematics and science. When I challenged his assumptions, I was surprised to learn that his father was the source of this view. On many occasions, the father had told his son, "Don't worry about math, you are a humanist." This student was extremely nervous in school and in the biology class I observed. Perhaps most difficult for this student was the fact that he is also doing poorly in his Latin class. As a "humanist," he felt particularly ashamed of his performance there.

Students' Likes and Dislikes About School and Teachers

While many students said they enjoyed interacting with peers and teachers at school, the majority of students disliked the fact that school is obligatory. Many considered school to be a burden in their lives: a place which imposes a steady stream of demands on their time, and a place where they are judged critically based on their performance. A *Gymnasium* teacher referred to school as "a forced community" in which many students do not feel free. Teachers, parents, and students commented that German schools are not as "cozy" or "homey" as are schools in the United States. A 12th-grade student at a vocational *Gymnasium* who spent a year as an exchange student at a U.S. high school said American teachers were more "easygoing" and therefore the lessons were more fun. She also emphasized the cooperation among students at the American high school: "Here I feel like it's everyone for himself, but in America we did a lot of work in groups. The other students were really friendly."

The father of a *Gymnasium* student disliked the "over-emphasis on formal thinking in subjects like math and languages at the *Gymnasium*, and the relative neglect of free thinking in subjects such as art or music." He stressed that while the *Gymnasium* is modeled on a traditional system of education which included art and the humanities as well as science, the present-day *Gymnasium* falls far short of the classical ideal: "The biggest failing of the modern *Gymnasium* is its emphasis on science and scientific method." He complained, in fact, that more training (*Ausbildung*) than education (*Bildung*) occurs at the *Gymnasium*.

Many students find school to be a stressful place; in some cases, students feared being the object of ridicule by a teacher or other students. Several mentioned that students are often laughed at for getting an answer wrong in class. The mother of a eighth-grade *Gymnasium* student said that the transition from *Grundschule* to *Gymnasium* was particularly hard for her daughter:

> The *Gymnasium* is a stressful place, especially for incoming fifth-graders. In *Grundschule*, my daughter got all 1's and 2's [A's and B's]. On her first test in fifth grade at the *Gymnasium*, she got a 4 [D]. She cried when she got the test results.

Even so, not every *Gymnasium* student perceives school to be threatening or stressful, a fact made clear by observations of classroom instruction. In many cases, I noticed a lively, cooperative interaction between students and teacher and among students. This was as likely to be the case in upper-level *Gymnasium* courses as it was in courses at other school types.

In one eighth-grade biology class observed at a *Gymnasium*, students were able to joke with the teacher about the topic of the day: the common worm. Students in this class were enthusiastic about the topic, largely because the teacher was able to relate the physiology of the worm to human physiology. For example, after the teacher mentioned that worms breath air just like people, one girl asked "Why doesn't the worm suffocate when it's underground?" The teacher used this question as a way of introducing the principal of gas diffusion through a wet membrane, and he explained the anatomy and physiology of the worm's breathing organs. Rather than leave it at that, the teacher then turned the question around and asked the same girl: "Why then do you think a human being can't breathe underground?" This really captured the student's attention. Some shouted out answers: "Because people are too big!" "Because we're not slimy enough!" The teacher then explained how humans breathe and that gas diffuses across a wet membrane in our lungs, just like the worm. Only, he continued, since we are so large (acknowledging the student who gave that answer), we couldn't get enough oxygen just by breathing through our skin if we were underground. In effect, he said, we are in fact "slimy" (now acknowledging the other student), but only inside our lungs. The period continued like this with 90 percent of the students riveted to their seats the entire time. When class ended, many stayed to ask questions.

In contrast to this eighth-grade biology class, a seventh-grade chemistry class at a *Haupt/Realschule* painted quite a different picture of student motivation and involvement. The lesson topic was to learn to recognize "chemical properties," such as texture, smell, color, and combustibility. The teacher had her hands full trying to maintain discipline in the classroom—students often left their seats to see what their neighbor was doing and talked out of turn. Perhaps because this was a laboratory period, in contrast to the biology lesson mentioned above, the class was more hectic and loud. While some students apparently concentrated on the task and listened to the teacher, others were clearly not paying attention. The teacher made little effort to pull those

students into the discussion. Afterwards, the teacher indicated to me that she thinks some of the students are not bright enough to follow along and that she has to move on or those who do follow will get bored and cause trouble. In fact, she said the class I observed was not too chaotic, because several "problematic" students were absent.

Most teachers interviewed said that how a student reacts to the school environment depends as much on the student's personality and family situation as it does on the actual school setting.

> Depending on a student's background, he or she might find school to be a pleasant or an unpleasant experience. For example, when the family relationship is less than ideal, very often children find the school to be a replacement for the family. The school becomes a kind of home. The kids have their own orderly world here in school when it is missing at home. These students gladly come to school. Other kids, who do not lack a good environment at home, may find the strict order and the many rules at school to be unpleasant, and these kids do not come to school so gladly. They don't like the feeling of responsibility they have to bring to school. (*Gymnasium* teacher)

Many students reported having a great deal of respect for teachers, whom they feel have a difficult job. Students said that the teachers they respected the most were those who did the best job maintaining discipline and order in the classroom. Students were overwhelmingly supportive of "strict" teachers. However, they also emphasized that strict teachers should not be "authoritarian" and must treat students with a measure of respect.

For example, a *Gymnasium* student in the 13th grade said that he respects only those teachers who treat students with respect in turn:

> [Teachers] have to respect my opinions—to recognize that I do, in fact, have an opinion, and to not discount my opinion just because I am a student. I respect teachers who come to class with enthusiasm, who enjoy teaching. Also, [I respect] teachers who you can talk to outside of class as people. I don't like teachers who have the attitude: 'I am here to teach and you are here to learn.' The most important thing is that teachers respect us. This is partly reflected in the fact that in the upper grades the teachers use the formal address (*Sie*) with us. This makes a difference.

An eighth-grade *Hauptschule* student said that her favorite teacher "tells jokes in class and has a good time with students, but he still keeps class under control." She said she learns a lot in his class. When students misbehave, "the teacher does not get angry or yell and does not make the students feel bad." In contrast, a teacher she does not respect "often loses her temper and gets stressed out by the students. She has a hard time keeping class under control. She makes class stressful." Similarly, other students described teachers whom they did not respect:

> They are the kind of people who just stand there in front of you and don't have any idea what they should do. They can't keep the class under control. Everyone makes them crazy. Or the worst thing is when they jump on the whole class when someone is being difficult. Instead of dealing with the one person and keeping the class under control, they judge the whole class and we all suffer. . . . and when the teacher doesn't succeed in controlling the class, then he usually resorts to being authoritarian. And that of course just makes it worse. The kids just 'block' him at every step, but these teachers just don't understand this. (Twelfth-grade vocational *Gymnasium* student)

Definition and Purpose of Education

The question as to what constitutes a "good education" provoked lively discussion with parents, students, and especially teachers. Many teachers had obviously spent a considerable amount of time reflecting upon this issue, offering well thought-out responses. Parents also had interesting ideas as to what characterizes an "educated" person. In general, teachers tended to emphasize one of three ways in which education shapes the lives of young people: integration into society, development of the individual, and the acquisition of specific knowledge. Most respondents listed mathematics, German, and social studies as the most important individual subjects to be mastered in school. Following closely in importance, for most teachers, parents, and students, are natural sciences (chemistry, biology, and physics) and foreign languages.

While there was disagreement on which area is most important, teachers generally shared the opinion that education must accomplish the three complementary tasks of stimulating and shaping the social, personal, and intellectual development of students. Teachers also agreed that "education" does not occur only in school, but also in other contexts, such as family, peers, and community. Where there was not a consensus, this was normally a reflection of the different priorities and expectations of teachers at various types of secondary schools. *Gymnasium* teachers were most likely to emphasize the intellectual or academic purpose of education, whereas teachers at the *Haupt/Realschule* more often stressed the importance of education as a means of adolescent socialization. In contrast, a teacher at a *Gesamtschule* and several parents said that they considered the primary task of secondary education to be the stimulation of personal development and maximization of individual potential. A general definition of the purpose of education published by the largest teachers' union in Germany, the *Gewerkschaft Erziehung und Wissenschaft* (GEW), summarizes and incorporates all three viewpoints:

> Education has the task of empowering all individuals, as far as possible, to direct their lives with autonomy, to determine their own role within their community, and to take an active part in shaping society and social relations. Education, in this sense, is the prerequisite for finding one's own life path, for making this path meaningful and responsible, and for taking part in social change in as many areas as possible. This concept of

> education thus encompasses both individual and social personality development, and empowers each individual to have an impact on the course of social change, which will have an influence on his or her life. (GEW, Landesverband Central State 1992).

Gymnasium teachers frequently offered a list of specific skills and content areas, which form the basis of a good education. For example, one *Gymnasium* teacher said a well-educated person should possess mastery of at least one foreign language (preferably two), a fundamental knowledge of political processes, an ability to understand and articulate abstract mathematical and scientific concepts, and a highly developed capacity for critical thinking and reasoning. *Gymnasium* students echoed these attitudes in a more specific manner. Students said that knowledge of the following areas was a necessary part of a good education: mathematics, natural sciences, social sciences (in particular, politics, history, and geography), languages (German, English, and possibly a third language), art, and music.

Parents often shared this view:

> A good education is the basis for lifelong social and intellectual development. Education doesn't end with school but continues throughout one's working life and career. Prerequisites for a good education are the ability to reason, to think critically, and to solve problems. Some basic knowledge is necessary. One must be able to work with numbers, to articulate ideas, to hold an intelligent conversation, to work with new technology, etc. (Father of a *Gymnasium* student)

However, not all *Gymnasium* teachers emphasized subject knowledge over socialization. One teacher said he distinguishes two categories of education: first, education as particular knowledge, such as algebra, chemistry, and so forth, and second, education as socialization, that is, a more general knowledge of how one lives in and contributes to society. According to this teacher, the second category is a more important component of a "good education" than any amount of knowledge in particular subject areas.

Haupt/Realschule teachers, in discussing the subject knowledge needed for a good education, mentioned basic skills such as the ability to read, to perform simple arithmetic, and to understand the laws and political system of the country and state in which one lives. In contrast to *Gymnasium* teachers, *Haupt/Realschule* teachers more often emphasized the importance of the social functions of education:

> [Having] a 'good education' means being able to deal with an increasingly difficult and complex society and to find one's way in spite of obstacles—to be able to lead an independent and reasonable life. Of course, in a democratic society, this means being able to understand the problems of a democratic society. An educated person knows how to live in a democratic society. We have a word in German, *Herzensbildung* [literally,

> 'education of the heart'], and this means being good, not in a religious sense, but rather possessing character, honor, morals, values; knowing who one is and what one's purpose in society is. All this, in my opinion, is a necessary part of a good education. (*Haupt/Realschule* teacher)

This teacher also stressed that schools cannot accomplish the momentous task of educating young people on their own. Rather, a good education must develop "organically" over the entire life span and in all spheres of life. "As a teacher I cannot do it alone. I need help from students' families and from society. When a kid leaves my class and hangs out on the street, he should continue to be 'educated,' but all too often he is not being educated in a positive way either in society or at home."

In addition to the social and intellectual tasks of education, many teachers and parents emphasized the importance of education for fostering individual development, promoting self-esteem and self-discipline, demonstrating to young people what their capabilities and talents are, and encouraging students to reach their full potential. A *Gesamtschule* teacher said that he considers education to be a very personal issue and that each of his students has an individual pathway to becoming educated. Education, in this teacher's words, is a "personal process of discovering one's own interests and talents." A teacher at a vocational *Gymnasium* also emphasized that education is an idiosyncratic process. More important than the acquisition of particular subject knowledge, according to this teacher, is the fact that students learn how to learn, and that in the process they discover they are capable of concentrating on and learning concepts from any subject, if and when they choose to do so.

Similarly, several parents of secondary school students were of the opinion that the purpose of education is to foster individual development. As the mother of a 12th-grade *Gymnasium* student put it, a good education insures that an individual develops "many antennas." An educated person will find something interesting in almost every topic or subject and, therefore, makes a lively conversation partner. The father of a *Gymnasium* student said that the purpose of education is "to realize as early as possible that questions are more important than answers." Several parents and teachers added that education is the key to a good life and the best means to ensure success in an industrial society.

Attitudes Toward the School System

Few topics evoked as much heartfelt debate with teachers, parents, and students as did questions about the German school system. The primary point of contention concerning the German school system is the age at which children are selected to attend one of the four types of secondary schools. In most cases, students are tracked after fourth grade into either *Gymnasium*, *Realschule*, *Hauptschule*, or *Gesamtschule*.

Students, teachers, and parents from the *Gymnasium* were generally very happy with the existing system. In fact, some teachers from the *Gymnasium* expressed a wish to revert to a more selective system, making the performance criteria higher for selection

to attend the *Gymnasium*. Many *Gymnasium* students supported the current school system, often saying that they had been selected to attend the *Gymnasium* based on intelligence. The comment of one parent is typical:

> I find that the German system of segregating kids after fourth grade works perfectly. I think that by that age one can tell what a child's talents are—whether he is better suited for *Gymnasium* or for a practical trade. Certain kids are suited for hand trades, such as construction, technician, etc., and you can already determine this by the 4th year of school. (Father of two *Gymnasium* students)

Many teachers believe that the best students should be segregated in order to allow them to fulfill their academic potential and that there is nothing wrong with a system of segregation into different school types so long as avenues exist for mobility between schools:

> Germany is a land without natural resources. It is overdeveloped. What we have to export to the world is our brains, our skills, and our abilities. Thus, it is crucial that our schools develop our children to their full mental potential. Therefore, I think the system is good. Of course, there have to be opportunities for children to move up from *Realschule* to *Gymnasium*, for example, or vice versa. But these opportunities do exist, after 4th, 6th, and 10th grades. The important point is that students who are suited for the *Gymnasium* would not be challenged to achieve their full potential in a middle-level school. (*Gymnasium* teacher)

In contrast, teachers, parents, and students from other secondary school types often raised serious criticism of the existing system and generally said that fourth grade is "too early to make a school tracking decision." The father of a vocational school student said that the German school system does not adequately foster students' psychological and social development, nor does it encourage every child to live up to his or her individual potential. Many teachers and parents shared this view. One father said that the system of deciding in fourth grade whether a child will attend *Hauptschule*, *Realschule*, or *Gymnasium* is simply "nonsense."

One teacher at a *Haupt/Realschule*, who grew up and attended school in former East Germany, said that he believes the system there was fairer to all children. In East Germany, students attended a common school from 1st through 10th grades, and only then was a decision made about whether a student would attend an academic or vocational school. According to this teacher, the former East German system, in contrast to the present system, allowed ample time for students, teachers, and parents to determine where a student's interests and abilities lie before making an appropriate school-tracking decision.

In the last decades, several alternatives to the traditional tripartite German school system have been introduced, including the "orientation level" (*Förderstufe*) and the *Gesamtschule*, in an effort to postpone the segregation of students into different school tracks. The *Förderstufe* during grades five and six is offered at some *Grundschulen* as an alternative to choosing between *Gymnasium*, *Realschule*, *Hauptschule* or *Gesamtschule* after fourth grade. Many teachers expressed the opinion that delaying a school tracking decision is advantageous for many students, particularly for "late bloomers," who thereby have more time to "show their stuff."

Students were also often-enthusiastic proponents of the *Förderstufe*. For example, an eighth-grade student who attended a *Gymnasium* in fifth grade but had to transfer to the *Realschule* because of failing grades believed that she would have benefited from attending a *Förderstufe* and waiting until sixth grade to decide what kind of secondary school to attend. She said she didn't do well in *Grundschule* because she didn't like school and did not realize how important it was:

> Kids don't know how to learn in fourth grade and so it's no fun at school and they don't do well. In *Grundschule*, kids are still playing with Barbie dolls. If they had more time, maybe they'd learn how to do well. I only learned too late to work hard for school, and now I have to try even harder to catch up. It's too hard. I don't know if I can make it through *Realschule*.

A 12th-grade *Gymnasium* student also praised the *Förderstufe*, which he attended before entering the *Gymnasium* in 7th grade. He believes that the transition from *Grundschule* to *Gymnasium* would have been more difficult for him in fifth grade than the transition to *Förderstufe* and that he learned just as much during the fifth and sixth grades in the *Förderstufe* as he would have at the *Gymnasium*.

The other alternative to the traditional segregation after fourth grade is the *Gesamtschule* (comprehensive school), which accommodates students who would have attended different secondary schools within one school. While many praised the *Gesamtschule* in theory, most teachers and parents said they felt that in reality *Gesamtschulen* are often too large to provide adequate support for all students. In addition, the multitude of tracks and educational pathways within the *Gesamtschule* make it even more difficult for students and parents to make informed decisions regarding education and career.

> In practice, *Gesamtschulen* are simply too big. I did my student teaching at a *Gesamtschule* where there were 3500 students and 250 teachers! I said to myself after this experience. . . . never in such a factory! The anonymity was terrible. The *Gesamtschule* has to be so large because of financial and logistical reasons. In order to offer all the different tracks and courses, you have to have that many kids and teachers. But I certainly wouldn't want to work in an environment where I have to run around with a name badge saying 'I am colleague so and so.' (*Haupt/Realschule* teacher)

Transition from School to Work

Vocational Decisionmaking

Sources of vocational information are highly transparent and uniform throughout Germany, a fact made clear during interviews with teachers, students, and parents from all types of school. When asked about sources of information for vocational decisionmaking, everyone interviewed mentioned the government-sponsored labor office (*Arbeitsamt*) and career information center (*Berufsinformationszentrum*), which are present in most German cities of medium size or larger. The labor office serves many functions: it is a central clearinghouse for vacant positions, it offers advising for unemployed professionals or laborers, it conducts in-school visits and provides one-on-one career advising for students, and it advises university students on career fields and job hunting. The career information center, often housed in the same building as the labor office, is a library containing a wealth of printed material, videotapes, computer databases, and other sources of information on a host of careers. All of these services are available to the public at no charge.

Students also have access to printed information on a multitude of careers published by the federal government (*Bundesanstalt für Arbeit*) and made available to the public. These "career information brochures" (*Blätter zur Berufskunde*) are written by academics or practitioners in the field they describe. Generally, the brochures include a detailed description of entry requirements for the field, programs of study, types of employment within the field, opportunities for further education and advancement, expected earning potential for entry-level and senior practitioners, and lastly, forecasts of employment prospects for the coming years.

In addition to professional career counselors at the labor office, many schools have one or more teachers designated as career advisors, who gather and disseminate relevant career information to students. In many cases, teachers said that the career advisor simply distributes government publications, such as the career information brochures mentioned above. Many said that most career advising in school does not take place with the designated counseling teachers, but rather occurs in an informal manner with regular teachers who take an interest and discuss careers with their students, either individually or with the entire class. Large schools such as the *Gesamtschule*, in addition to career counseling, normally offer academic advising on school tracks and courses. Teachers emphasized that "school track advising" (*Schullaufbahnberatung*) is necessary in the *Gesamtschule* because of the multitude of pathways within the school leading to different types of leaving certificates and ultimately to different career options.

Teachers agreed that it is relatively easy for a student in Germany to find out how to enter a given vocational field—the student simply reads the career information brochure for the intended field and follows the recommended path towards meeting the entry requirements for the apprenticeship or university training program. Once having

become certified in a particular field, however, it is difficult to change professions. In many cases, this would involve starting over and completing another training program. Teachers, parents, and students indicated that the "inflexibility" of the German labor market is presently an issue of great concern.

Hamilton (1994) has characterized education and employment in Germany as having high "transparency" and low "permeability." Transparency refers to the ease with which a student can plot a course from school to work for any type of career, i.e., the more formalized the entry requirements are for most jobs, the more transparent the system. In contrast, permeability refers to how easy it is for a student to move from one point to another in the system: in other words, how difficult or easy it is to change career goals once he or she has embarked on an occupational path. Students, teachers and parents largely confirmed Hamilton's characterization of the German educational and employment system.

A *Realschule* teacher aptly summarized the basic difference between school—to work transition in Germany and the United States:

> In America, I can take a test to qualify myself....I do not necessarily need to provide proof of achievement or other qualifications in order to take this test. This is impossible here. In Germany, one must first have studied [at the university] in order to take the exam. And you cannot study unless you have the *Abitur*. And you cannot attend an upper-level trade school unless you have a middle-level certification. That means that if you miss a qualification when you are 15 or 16, for whatever reasons, then in principle you have missed it for your entire life. This is hard and brutal. On the other hand, the person who gets through this system has achieved something.

Since the German education and employment system is highly structured and credentialed, there is a strong incentive for young people to make vocational decisions early and stick to them. Therefore, it should not be surprising that more than two-thirds of German adolescents surveyed in 1992 said that they had concrete vocational plans (Fischer 1992). According to parents and teachers, this tendency is reinforced not only by education structure and institutions, but also by family, community and peer pressure.

However, in spite of the pressure to make vocational decisions, students demonstrated a notable lack of certainty about future professions and vocational pathways. Many mentioned that "indecision about a future career" was causing them concern and worry. This statement was heard from students, parents, and teachers from all types of schools. Several teachers and parents of *Gymnasium* students said that their students or children had not decided on a career or vocational path as late as the 12th grade. The mother of one 12th-grade *Gymnasium* student said that uncertainty about a career is causing her

daughter "existential anxiety." She noted that one result of this anguish may be seen in the fact that many young people "wait until absolutely the last minute to decide what to study at the university. Or they begin one course of study and after a semester change to another."

A teacher estimated that as many as 70 percent of students in the upper grades at the *Gymnasium* do not know what kind of career they wish to pursue. In this regard, he said that men have an easier time dealing with uncertainty about a career than women, because men typically need to complete obligatory military or social service before embarking on a career. This provides additional time for men to consider career options and reach a decision. Many *Gymnasium* students had the opinion that earning the *Abitur* was the first step to be completed before giving serious consideration to any particular career. Although the *Abitur* is the traditional qualification for studying at a university, many students who were not sure they wanted to study at a university still viewed the *Abitur* as a "security blanket" which would increase their career options later in life.

As an aid to vocational decisionmaking, many schools offer a course in "career studies" (*Berufskunde*) as part of the regular curriculum. For example, at a *Gesamtschule*, students indicated they complete a required course in ninth grade in which they learn about various careers and vocational opportunities. In this course, students also learn fundamentals about the labor market, the economy, and legal forms of business organizations.

In addition to the course in career studies, many secondary school students complete one or more internships with local companies and organizations of their own choosing. For example, the same *Gesamtschule* maintains a list of local firms willing to accept student interns. These practical experiences are valued by teachers, parents, and students as an excellent means of learning the nuts and bolts of business operations and as a useful aid to vocational decisionmaking. The father of a student in the 10th grade at a *Realschule* described his son's internship with a local photo store:

> My son stood behind the counter all day and learned how to deal with customers. He also learned a little bit about how business functions behind the scenes; for example, how inventory is kept. Most importantly, however, he learned what it is like to work all day long and how important education is in order to find a satisfying job.

Students do not normally attend school during their 3-week internships, and they are not tested on what they learn during the internship. Instead, teachers visit their students at the organizations where they are working to check on their progress and to ensure that they are learning from the experience. Students view the internship as a chance to test whether an intended career truly matches their interests.

A teacher at a combined *Haupt/Realschule* described how the internship process works at her school. She said that students complete internships with companies largely to see whether they could imagine themselves working in a particular field. Teachers guide

students through their internship and ask them to write reports and to keep a diary about their experiences. In addition, counselors from the labor office visit the school and advise students in groups and individually about their career options.

Despite the long list of resources available to students, including the labor office, career information brochures, teacher advisors, vocational courses and internships, several students stressed the difficulty of making vocational decisions. For example, regarding the labor office, a student at a vocational *Gymnasium* said that he did not find it helpful:

> If you don't know what you want, no one else can help you decide. There's the labor office, but they also can't help you unless you know what you want. For example, I went there and looked around in the career information center, but there were simply rows and rows of books on different jobs. It was too much. I felt lost.

One *Gymnasium* teacher was extremely critical of the labor office. He believes the labor office visits secondary schools largely "to promote its own interests." In addition, he said that the information presented by the labor office, including career descriptions and statistics on employment outlook, is "terribly outdated." As an organ of the state, this teacher said, the labor office tries to push young people into those professions in which there are shortages of personnel without regard for students' wishes or well being.

Vocational Education

Germany has an extensive system of vocational education with a rich tradition dating at least back to the medieval guilds (Bundesministerium für Bildung und Wissenschaft 1994). Graduating secondary school students not intending to study at a university may choose to enter one of about 380 recognized professions, each with its own apprenticeship program leading to professional certification (Arbeitsamt Central City 1993–94). Apprenticeship positions are an integral part of Germany's "dual system," in which student trainees work more than half time in a firm and attend a vocational school for 1 or 2 days a week. (In East City, apprentices alternate every 2 weeks between full-time work and full-time school attendance.) Apprenticeships (*Lehre*) have an average length of 3 years, and range from 2 to 3.5 years. A large percentage (77 percent in 1990) of German adolescents in each age cohort learn a profession through participation in the dual system (Arbeitsgruppe Bildungsbericht 1994). In 1993, for example, around 570,000 youths nationwide signed an apprenticeship contract signifying the beginning of their professional training (Griesheimer 1994).

According to *Gymnasium* teachers [illegible] parents of *Gymnasium* students, lucrative apprenticeship positions in insurance and banking are highly sought after by *Abitur* holders, because they "almost guarantee a job" upon completion. In many cases, banks and insurance firms hire the apprentices as full-time employees after they have successfully completed their training. However, many of these students go on to study at the university after completing professional training. For ambitious students, a professional apprenticeship followed by university studies in business, economics, or a

technical field is often the most desirable route to a secure future. For example, a 13th-grade *Gymnasium* student intended to complete a banking apprenticeship before beginning university studies in international relations. This way, he said, he has a much better chance of getting a job in international banking than he would as a university graduate without career experience.

Abitur holders made up 14.5 percent of all apprentices in 1992 (Bundesministerium für Bildung und Wissenschaft 1993). More than half of these are concentrated in just five professions, all of which are in business and service industries. For example, in 1992, over 60 percent of the trainees in the banking and insurance fields in Hessen were *Abitur* holders. In fields such as information management, publishing, and advertising, *Abitur* holders made up over 80 percent of trainees. In contrast, in technical or other skilled labor fields, such as industrial mechanics, general business administration, or carpentry, less than 20 percent of trainees in 1992 were *Abitur* holders (Arbeitsamt Central City 1993–94).

The traditional prerequisite for entering an apprenticeship is a diploma from the *Hauptschule* or *Realschule*. However, *Haupt/Realschule* teachers said that in recent years there has been an increasing tendency for students graduating with the *Abitur* from a *Gymnasium* to enter an apprenticeship program instead of studying at a university. This trend has led to a displacement of students with diplomas from *Realschulen* or *Hauptschulen* from the more desirable apprenticeship fields, such as banking and insurance. This displacement is of great concern to teachers, parents, and students from the *Realschule* and *Hauptschule*. A *Hauptschule* teacher said, for example, that students with a *Hauptschule* diploma have few options open to them other than apprenticeships in the manual labor trades.

University and Higher Education

While the German system of vocational and academic education may appear to be "impermeable," there are in fact numerous alternative pathways open to the dedicated student or professional who wishes to switch academic paths or change careers. Alternative forms of higher education exist alongside the German universities. Many technical subjects are taught in "technical colleges" (*Fachhochschulen*). Private colleges also exist, usually specializing in one or several related areas of expertise, although private academic institutions are by no means widespread.

Students who earn the *Abitur* have earned the legal "right" to study at a public university. Technically, the *Abitur* confers the right on its holder to study any subject at any university in Germany. However, for many subjects there is a system of selection in place, known as *numerus clausus,* which is based on academic performance. There are entry restrictions for an increasing number of subjects taught at German universities. In subjects such as biology, medicine, psychology, chemistry, and many others, one must demonstrate superior performance (as measured by *Abitur* grades) to be accepted into a

program. Competition for admission is often severe, and many above-average students do not receive immediate placement in their chosen field. These students have the options of reapplying in following years, applying to a less competitive field, or perhaps studying in another country.

Secondary school students have alternative pathways to the *Abitur*, as do adults who choose to go back to evening school to earn the *Abitur*. The vocational *Gymnasium* is one example of an alternative route to the *Abitur*. Students at the vocational *Gymnasium* earn the *Abitur*, while simultaneously taking courses in a vocational area. In fact, several 12th-grade vocational *Gymnasium* students mentioned that the vocational *Gymnasium* has the reputation for being an easier route to the *Abitur* than the traditional *Gymnasium*, a statement that was reiterated by teachers at the same school.

External Influences on Adolescent Development and School Success

Family Influences

Parental involvement. Annual or semiannual parent-teacher nights (*Elternabende*) are the most common way in which parents are involved in their child's education. During these evenings, parents meet their child's teacher(s) and have the opportunity to discuss their child's performance, attitude towards school, and special needs, if any. In addition to parent-teacher nights, there are several other means for interested parents to become involved in their child's school. One such possibility is the parent council (*Schulelternbeirat*), a cooperative body that works with the school administration and teachers somewhat like the U.S. Parent-Teacher Association (PTA). The parent council is elected each year and serves the function of representing parent interests at official and unofficial school meetings or whenever important school decisions are made. Members of the parent council are elected from each class by the parents in attendance at parent-teacher night at the start of the school year. A "class" is a group of 30 or so students, not an entire grade level. Thus, there might be four 10th-grade classes at a school, and consequently four parent representatives from the 10th grade on the parent council. Parents of students who are age 18 or older are not eligible for election to the council. The parent council elects a chairperson and a deputy chair and then meets roughly bimonthly. Parent council members at several schools said that they generally operate by reaching a consensus on most issues. In addition to being the elected "voice" of the parents, the council also serves as a channel of informal communication between teachers, school administration, and parents. In some cases, the parent council may assume the additional task of fundraising. For example, the chair of the parent council at a vocational *Gymnasium* said that the council raised money to buy a new piano for the school's music room.

Another formal body in which parents may become involved is the school council (*Schulkonferenz*). Introduced by recent legislation in some states, the school council consists of five elected parent representatives, five elected teacher representatives, and the school principal *ex officio*. The council meets several times a year to discuss issues such as curriculum changes, budgetary concerns, and participation in outside research projects. In addition, the school council holds discussions on issues brought to its attention by teachers or by the parent council.

Lastly, some schools have an informal group known as the parent "table" (*Elternstammtisch*), which meets in a public location, such as a restaurant or pub. Any interested parties are welcome to join the forum and voice their opinions. Often, there is a core group of participants who come regularly to the meetings. In many cases, this core group includes the school principal and one or more teachers (who might also be parents of students at the school). The parent table is a chance for parents who are not comfortable with approaching the parent council to bring up issues of concern in a less threatening forum. These issues might then be discussed at the next parent council meeting.

Parental involvement at different types of school. The role that parents play in their children's education differs drastically from one type of secondary school to the next, a point made clear by teachers, students, and parents at all school types. Also, the formal and informal ways in which parents are involved in their children's education varies with the age of the child. German students are considered legal adults at the age of 18. This is important, because many students in the upper grades at *Gymnasium* and especially at the vocational school are 18 or older. A vocational *Gymnasium* teacher mentioned that if he has to send a "warning notice" for poor performance to a student who is 18, he simply hands the notice to the student, who signs it herself or himself. A student who is 18 also signs his or her own absentee excuses. Legally, parents of "adult" students are not formally involved in school at all. For example, there is no parent-teacher night for students who are over 18. Of course, the parents of these students may still be involved informally in their education.

Parents of *Hauptschule* students are usually involved very little in their children's education. Without exception, *Hauptschule* teachers complained that hardly any parents attend parent-teacher nights. For example, one *Haupt/Realschule* teacher said he is lucky if 2 or 3 out of 25 parents from his *Hauptschule* class attend parent-teacher night. Teachers said they were often faced with the dilemma of having to "raise" students who are "growing up on the streets" as well as teach them. Teachers at one *Haupt/Realschule* visited were in agreement in their belief that lack of parental interest and involvement is a phenomenon stemming from the family situations of the socially underprivileged:

> The kids here at the *Hauptschule*, they don't come from families where everyone gets along and Grandma still makes breakfast in the morning. That's history man, that's not the reality today, here, in this school. (*Hauptschule* teacher)

Parents of *Realschule* students participate more regularly in parent-teacher nights than do *Hauptschule* parents. For example, the same teacher at a *Haupt/Realschule* said that he can expect as many as 10 out of 30 parents from his *Realschule* class to attend parent-teacher night. In addition, teachers said that parents of *Realschule* students are more likely to check on their children's homework and show interest in their grades. Still, none of the students from the *Realschule* said that their parents help them with homework or other assignments very often (with the exception of one student whose mother is a teacher). In several cases, *Realschule* students said that their parents are busy "working all the time" and do not have the time to be more involved.

Parents of *Grundschule* students, especially in third and fourth grades, tend to take a more active role in their child's education. Teachers emphasized that this is often the case because parents have the hope that their child will be able to go to the *Gymnasium* in fifth grade. In the state where Central City is located, parents are able to decide themselves which type of secondary school their child will attend. In other states, grades and the teacher's recommendation determine the choice of secondary school. However, in either case, parents are usually motivated to see their child attend the best type of secondary school possible. In addition, teachers said that parents of *Grundschule* students generally feel comfortable with the content of the subjects their child is learning and can more easily assist with homework if necessary.

Of all parents, those of *Gymnasium* students are the most likely to be involved in the workings of school and in their child's education. This was confirmed by teachers, students, and parents from all types of secondary schools. For example, one *Haupt/Realschule* teacher lamented that not only does the *Haupt/Realschule* lose the best students, who go to the *Gymnasium* after fourth grade, but also that "the best parents go with them." Most parents of *Gymnasium* students said they regularly attend parent-teacher nights. *Gymnasium* teachers agreed, emphasizing that they have near perfect attendance at parent-teacher nights.

Parental support at home. Many parents of secondary school students said that the primary way in which they supported their child's education was by providing a safe, quiet environment in which their child could learn. However, most parents did not mention spending much time helping their child with his or her homework. Students, especially in the upper grades, are often considered to be academically independent and not in need of assistance with homework or assignments. For example, the mother of a 13th-grader at a *Gymnasium* said that her daughter sets her own study schedule and confers on her own with teachers, when necessary. Rather than helping with school assignments, this mother emphasized her role as someone who listens to her daughter's personal problems and runs the household.

While many teachers expressed the wish that parents would check to see that their children complete their homework, few teachers, if any, believed it was necessary or desirable for parents to help their children with homework. In fact, the explicit attitude

at one *Gesamtschule* was that asking parents to help with their child's homework would introduce inequity into the system, as some parents would cooperate and others would not. Teachers at this school believed there is ample time for students to complete assignments during the school day, and school policy discourages assigning homework.

Perhaps more important than assisting or checking on homework, however, is the way in which parents interact with their children and support their school activities; in other words, the parental style. Several studies have indicated that parents who have an "authoritative" style, consisting of a combination of responsiveness and demandingness, are more likely to foster academic achievement among their children (Steinberg et al. 1992; Dornbusch et al. 1987). Authoritative parenting includes high acceptance of a child's strengths and weaknesses and a high level of supervision, while at the same time granting a large degree of psychological autonomy. While by no means always the case, this description of an authoritative parenting style best matches the stated and observed behavior of parents of *Gymnasium* students. Moreover, an authoritative parenting style is correlated with a high level of parental school involvement.

One *Haupt/Realschule* teacher thought about the issue of parental support from the students' point of view, and commented on how difficult it is for a student to succeed without parental support:

> Students who always get good grades come from a home which cares about them and always reinforces success. Imagine a student who never gets that feedback! How can that student do well in school? It takes a special person to ignore parents' attitudes about school and life and do well in school! Parents often do not realize that they can do a lot of damage.

Family structure and interaction. The most frequent reason that teachers gave for adolescent problems and poor school performance was lack of family support or lack of parental interest in their children. A *Haupt/Realschule* teacher said the families of many of his students have "fallen apart." According to this teacher, in many cases parents have simply stopped trying to raise their children, leaving "more and more children on their own."

These sentiments were echoed by other teachers. One *Haupt/Realschule* teacher said that he believes most behavioral and performance problems in school stem from a troubled family situation:

> The amount of problems that teachers have to deal with has increased dramatically in the last few years. And I can trace all sorts of problems we have in school—vandalism, aggression, violence, poor performance, absenteeism, etc.—back to the family situation in most cases. . . .The basic cause of most problems is that many children no longer have a trusted person at home with whom they can speak. The kids suffer starting at a young age.

> When the family falls apart, the student's school achievement naturally suffers also. But the problem is that as a teacher you can do nothing to change a student's family situation. One is helpless. The only thing that one can do is to be friendly, perhaps to offer to talk to a student if he or she wants to. But we are fighting a losing battle.

"Neglect" (*Verwahrlosung*) was a word mentioned time and again by teachers and parents from all types of secondary schools. A *Gymnasium* teacher said she believes that the number and extent of social contacts for children is continuing to diminish. She emphasized the importance of positive social contacts for adequate development of self-esteem and social orientation. In fact, she believes that children growing up in social isolation and neglected by their parents make the most ready targets for extremist groups, both right- and left-wing. Another *Gymnasium* teacher put it succinctly when he said: "My impression is that children in Germany are morally and spiritually neglected by their parents and teachers."

Some parents and teachers blamed this state of affairs on the fact that there is an ever-increasing number of dual income families, leading to a greater number of "latchkey kids" (*Schlüsselkinder*). Little discipline is enforced on these children, who have free access to cable TV and spending money.

> I often have the feeling that a child was nursed as an infant, then weaned, and then placed somewhere in a corner or in front of a TV. In other words, parents don't pay much attention to their children. (*Haupt/Realschule* teacher)

The father of a vocational school student said parents used to take a more active role in "promoting their child's development," but now many are too busy or are not interested enough to put the energy into raising their children correctly. Similarly, the mother of a student in the *Gesamtschule* said that the problems German youth face stem largely from a lack of orientation. Parents are no longer able to discipline their children because they have very little discipline themselves, she said, and their lives are too hectic for them to sit down and think about how their children are developing. In addition, she believes that many parents value their own leisure time more than they value spending time with their children. She added: "Money and material things are a poor substitute for parental time and interest."

Peer Influence

The "class" system. German schools divide incoming students into "classes" which usually remain together over the course of many years. For example, a *Hauptschule* might divide 120 incoming fifth-graders into 4 classes, 5A, 5B, 5C and 5D. The following year, class 5A becomes 6A. Thus, students spend a great deal of their time in school with a fixed

group of between 25 and 30 peers. Classes are sometimes split, however, when new students come to the school and the size of the class becomes too large. In addition, students in the upper grades at the *Gymnasium* follow a course system, which in effect, disperses the class into different courses according to interests.

Teachers and principals from several schools were quick to point out that the "class" system is a deliberate attempt to help make students feel comfortable in school. Spending so much time with a fixed group of peers fosters mutual trust and understanding. According to teachers, one of the most difficult times in a young person's school career is the transition made after fourth grade, when students from one *Grundschule* class (who have been together for 4 years) are split up and attend different types of secondary school. Wanting to remain with friends was one reason frequently cited by students and their parents concerning their choice of secondary school. In particular, students who go to *Gymnasium* in fifth grade while most of their *Grundschule* classmates go to *Realschule* may have a difficult time adapting. The mother of a student who is now in the eighth grade at a *Gymnasium* said that in fifth grade her daughter cried every day in school and at home.

Peer groups and attitudes toward school. At the secondary school level, students at each type of school suggested that students develop a sense of group identity based on their common school experiences. Most students from the *Gymnasium* readily expressed negative stereotypes of students at the *Realschule* or *Hauptschule*. For example, they said that *Realschule* students need to have things explained in concrete terms in order to understand, and that *Hauptschule* students are lazy. In contrast, *Gymnasium* students identified themselves as abstract, logical thinkers, capable of solving problems on their own. These attitudes are reinforced by teachers, parents, and society in general. For example, parents and teachers often expressed the attitude that a certain type of person is "suited" (*geeignet*) for the *Gymnasium*, while a different type is suited for *Realschule*. However, the stereotypes run both ways. *Realschule* students often stressed proudly that they were "practically-oriented" or "artistically-inclined" individuals, while at the same time expressing disdain for the "abstract" or "intellectual" *Gymnasium* students.

According to teachers in East City from both a *Gymnasium* and an adjacent combined *Haupt/Realschule* that share a common yard, the two schools had to schedule breaks for students at different times. When students from the *Gymnasium* and *Haupt/Realschule* previously had breaks at the same time, there were often fights between them. Since the breaks have been scheduled at different times during the day, the frequency of fights has diminished.

In addition to between-school rivalries and divisions, students within one school often further subdivide themselves into various groups or cliques. Peer groups provide social reference points for adolescents, help to establish norms of behavior, and thus have an impact on school performance (Petersen, Leffert, & Hurrelmann 1993). For example, students who belong to academically-oriented cliques consistently perform better in

school than do peers in nonacademic cliques (Steinberg & Darling 1994). *Gymnasium* teachers noted that their best students often study together with their friends. In some cases, interested and motivated students may form a project group (AG) with or without the supervision of a teacher to examine a particular issue in greater detail.

Substance use. One significant area of peer influence is substance use. The interviews made clear that there is a large variation in the degree of substance use, depending on the type and location of secondary school and the age of students. For example, students at a *Gymnasium* in a small town reported knowing "one or two" students who smoked hashish "once in a while" and never at school. In stark contrast, students at urban schools often said that drugs are a problem:

> Everyone has smoked hashish. That's almost like smoking tobacco or drinking alcohol. But I mean, in the last school I was at, practically everyone smoked hash *at school*. A lot also took speed or popped pills. (Twelfth-grade student at an urban vocational *Gymnasium*)

The same student said that the drug scene at his school and others was "bad and getting worse." He and his classmate made it clear that they were not just talking about marijuana use; rather, they meant all kinds of drugs—tranquilizers, amphetamines, cocaine, LSD, and Ecstasy, in addition to hashish. One student's recommendation, an opinion shared by many young people, is to legalize drugs "as in the Netherlands" so that they can be controlled. This student, however, drew a sharp line between the drug scene in the schools and the heroin community in major cities:

> I think the real problem is that there are a lot of students who first turn to drugs once in a while on the weekend to escape from stress. Then they start using drugs during the week, and 1 day they might try heroin, or something like that. Of course, there is a world of difference between heroin and other drugs. The heroin scene is really bad, but the other drugs, well, they are taken by totally normal people—university students, school students, and people who are working. But it is really bad when you get messed up, because you end up not sleeping at all, you can't stand being with people, you don't like yourself anymore.

Several students mentioned that use of the "designer drug" Ecstasy (a synthetic amphetamine derivative) is often associated with going to discos where Techno music is played. Teachers said that Ecstasy is particularly a problem because many adolescents are not aware of its harmful effects. Several students said that Ecstasy is widely available at parties and discos, and many students are of the opinion that the "little blue pill" is safe. In fact, the image of Ecstasy as a safe and "cool" drug is reinforced in youth magazines such as *Bravo*, one of the most popular youth magazines in Germany and other European countries. For example, in a *Bravo* series called "Full Speed," which is billed as a "photo love story," a young girl becomes a successful pop star after taking Ecstasy. Before taking the pill, she asks whether it is "very dangerous." The answer is: "That's cool stuff. You're gonna feel great!" ("Full Speed" *Bravo* 1994, p. 44).

Younger students, even at urban schools, were less aware of drug problems at their school. For example, in response to the question of whether she knew any people at her school who take drugs, an eighth-grade student at an urban *Hauptschule* in an underprivileged neighborhood said she knows a lot of kids who smoke cigarettes. Upon further prompting, it appeared that she knew of no one who used any drugs other than tobacco or alcohol. Her classmate was equally unaware of fellow students using drugs.

A *Realschule* teacher offered the theory that drugs were more of a problem at the *Hauptschule* and the *Gymnasium* than at the *Realschule* due to socioeconomic and cultural factors. He attributes drug use at the *Hauptschule* to the fact that *Hauptschule* students typically come from socially disadvantaged families. On the opposite end of the spectrum, *Gymnasium* students, who typically come from more advantaged backgrounds, may turn to drugs because of boredom or the urge to experiment. According to this teacher, the middle-class *Realschule* student has the least inclination to turn to drugs:

> [At the *Realschule*] there are students with drug problems, but these students do not account for even 1 percent. At the *Gymnasium* and at the *Hauptschule* drugs are relatively common. . . . In order to understand this, one must understand the students' psychology. The *Realschule* student is. . . a well-behaved, ambitious, and upright kid. The *Hauptschule* student is very often from a lower social class background with the problems of families in this class. . . . These things can be compensated for with drugs. And *Gymnasium* students are intelligent, very independent, and agile. They see drugs partially as a necessity in order to satisfy their high-spun ideas and ideals.

In contrast to illegal drugs, use of alcohol and tobacco is very common among German adolescents. The legal drinking age is 16, and many students said that a common leisure activity was going to a pub with their friends. Smoking is very popular, especially among older secondary school students and university students. "Rolling your own" is a common social activity during short breaks during the school day. Students in the upper grades at all types of secondary schools were observed to stand chatting in small groups in the school yard during breaks, during which time many reached for their tobacco pouch and rolled a cigarette.

Smoking in Germany is not much stigmatized at this time. While most people seem aware of the health dangers associated with smoking, very few restaurants and cafés have nonsmoking sections, and schools still regularly provide a smoking room or a smoking area somewhere on the school grounds. Although there is a legal smoking age, clerks do not regularly check identification, and cigarette machines are widespread.

Student responses tend to support the results of previous studies of substance use among German adolescents, although the urban environment of students interviewed probably influenced their experience with substances. Studies have indicated that the reported use of illegal drugs among German secondary school students has declined dramatically since

the 1970's. Whereas in the 1970's illegal drug use (mainly hashish) was reported by up to 20 percent of adolescents aged 15 to 18, in 1990 only 5 percent of youths aged 12 to 25 reported using illegal drugs. Alcohol consumption among German adolescents also decreased steadily from the mid-1970's until 1986, when it reached a plateau. In 1990, according to a survey of youth aged 12 to 25, 40 percent of young people had consumed beer in the previous week, 15 percent wine, and 6 percent hard liquor. There were also notable gender differences in patterns of alcohol consumption. While 60 percent of males aged 18 to 20 reportedly consumed beer during the previous week, only 20 percent of females in this age group did so (Silbereisen, Robins, & Rutter 1993).

Sexuality. Another area of vital importance in regard to peer influence and interaction is sexuality. Starting in *Grundschule*, German schools offer lessons in sex education, which deal primarily with health issues, such as pregnancy and AIDS. According to Petersen, Leffert and Hurrelmann (1993), teenage pregnancy is not a widespread problem in Germany. However, there are serious negative consequences for those adolescents who do become parents, since further education and employment are usually postponed. Only one teacher, from a *Haupt/Realschule*, mentioned that a student in her seventh-grade class left school because of pregnancy and has not returned. In general, schools attempt to combat the problems of teen pregnancy and AIDS with awareness programs, which include special courses and informational displays in lobbies and classrooms. For example, the student café at a *Gesamtschule* featured a poster describing how to use a condom to reduce the risk of HIV infection.

However, despite the publicity and the abundance of information about prevention of AIDS, both inside and outside of school, students indicated that the "fear of AIDS" has not caused most adolescents to change their behavior. One student said that adolescents act on the premise that they are "immortal" and mentioned a lack of concern among his acquaintances regarding the use of condoms and the discussion of prior sexual partners:

> Everyone talks about [AIDS], everyone is afraid, but when it comes down to practice, I don't think people take it too seriously. Maybe you think about it at first, I mean using a condom and everything, but when you are lying next to your girlfriend in bed, once it gets that far, how can you talk about AIDS? It's an insult. (Twelfth-grade vocational *Gymnasium* student)

Several parents voiced concern about their daughter getting pregnant or becoming HIV infected. For example, the mother of a 14-year-old girl in the eighth grade at a *Gymnasium* said she is worried her daughter will associate with "the wrong group of people" and possibly get involved with drugs or experiment with sex. She confronts this problem by talking openly to her daughter about sex, pregnancy and AIDS, and hopes that her daughter will confide in her before she considers having sex for the first time.

Graffiti on a desk at a *Gesamtschule* demonstrate a lack of concern about AIDS among adolescents, or at least show a nonchalance about the risk of infection. The following verse was etched onto a desktop by a budding poet:

> Junge habe Mut/ Junge sei stark/
> Benutze kein Gummi/ und spar' dir die Mark
> *[Boys be brave/ boys be strong/*
> *don't use a rubber/ and save yourself a Mark]*

This macho attitude is also reflected in articles published in the youth magazine *Bravo*. The openness with which *Bravo* treats teen sexuality is notable. For example, a recent *Bravo* issue features an article entitled "Love with Peggy and Chris—the first time." In this article, a real teenage couple, Peggy (15) and Chris (17) talk about their sexual experiences. Chris describes, for example, how he first had sex when he was 12 with a girl of 16. He says of the experience: ". . . .the next day I went and told my father. At first he was speechless, but then he was somehow proud of me. And then I was proud of myself, too." ("Liebe mit Peggy und Chris" *Bravo* 1994, p. 21).

The article is an information and advice column for teenagers who are contemplating having sex for the first time. While there are plenty of warnings about the emotional dangers of sex, as well as the negative (social) effects of unwanted pregnancy, there is strikingly no mention at all of AIDS. The article describes how to have sex, what to do to make it more pleasurable, and includes the details of sexual physiology, without discussing the health risks and costs to the people involved.

Influence of Societal Factors

Unemployment and poverty. Teachers painted a rather dismal picture of the family situation of adolescents, especially in the new states of former East Germany. For example, a *Haupt/Realschule* teacher in East City talked about her students' lack of motivation to learn. When prompted for reasons for this lack of motivation, she cited social and family factors, such as high unemployment, poor economic prospects, lack of parental involvement and support, and lack of role models. She said that most students simply have not understood yet that they need a school diploma to find a decent job. Moreover, she said that many students have already given up on themselves. "When they receive a 'C' in math, they tell me they don't care, since they wouldn't find a job anyway."

> Students see that their parents are unemployed and are drinking all the time. Rents are increasing but not the condition or comfort of apartments. They are afraid of the future and don't know what to do with themselves. (*Haupt/Realschule* teacher)

Unemployment is a serious problem in Germany; as of January 1995, the national average was over 10 percent. Unemployment in eastern Germany was even higher, averaging 14.7 percent, whereas in the western states it was 8.9 percent ("Im Januar fast

300,000 Arbeitslose mehr" 1995). In a recent survey of economic conditions in the new states conducted by the Federal Youth Ministry, 40 percent of youth in former East Germany reported that they were currently experiencing "financial difficulties." This subjective judgment is supported by the statistic that one out of every three social welfare recipients in the eastern states is under 18 years old. However, there are indications that the economic situation in the new states is improving, at least for many, if not for all. For example, the percentage of families with children with a net monthly income of between 3,000–5,000 DM (about $2,000–3,300) tripled from less than 25 percent in 1991 to 68 percent in 1993. Fifteen percent reported having a net monthly income of over 5,000 DM ($3,300). Still, a large number of families with children (17 percent) reported a net monthly income of less than 3,000 DM ($2,000). Furthermore, 16 percent of single parents with children in the new states had a monthly net income of less than 1,000 DM ($660) in 1993 ("Junge Menschen im Osten zufrieden" 1994). See the table below.

Table 1—Net monthly income for couples and single parents with children in new states (former East Germany) in 1993

Couples with children	Percent	Single parents with children	Percent
less than 3,000 DM ($2,000)	17	less than 1,000 DM ($660)	16
3,000–5,000 DM ($2,000–3,300)	68	1,000–2,500 DM ($660–1,650)	59
more than 5,000 DM ($3,300)	15	more than 2,500 DM ($1,650)	25

SOURCE: Adapted from "Junge Menschen im Osten zufrieden" 1994.

Parents and students also expressed concern about unemployment. The father of two *Gymnasium* students said that he worries about whether his two children will be able to find the kind of secure jobs that existed in the past. "The labor market looks increasingly volatile. Jobs are no longer as secure as they once were." A *Gesamtschule* teacher said that the dismal employment prospects in many fields are causing young people to become "disoriented towards their career," having to settle for second, third, or fourth choice jobs rather than being able to realize their ideal career. Similarly, a *Realschule* teacher talked about the social effects of a lack of orientation:

> There is too little attention and warmth. It has become very inhumane in society. There is a lack of a sense of purpose. [Young people ask themselves] how can I be happy? Why am I here? In which direction should I develop myself?

Finally, some teachers worry about the direction German society is heading in general:

> Our economic system doesn't provide much encouragement for young people. In terms of people it's a "disposable" system. Qualified people are

> being tossed aside. This trend cannot continue. I fear that it could easily lead to a revolution. After World War II, we built a social state in Germany based on peace. This social state is now in danger. (*Haupt/Realschule* teacher)

The media and popular culture. Criticism of another important societal influence, the popular media, was readily heard in discussions with teachers and parents. Most often, parents and teachers said they believed the level of violence in the media was excessive, causing increased anxiety and aggression among children. The availability of pornographic videos was also deemed a problem. A *Haupt/Realschule* teacher said that violent films and sex films are a problem because after watching them, children lose sight of the boundary between reality and fantasy. She cited the example of a girl in her class who had a foul vocabulary and made lewd body movements, which, according to this teacher, she had learned by watching pornographic films. She said of the girl: "She had lost the capacity for human gentleness."

In urban neighborhoods, students are sometimes confronted with media violence and pornography on their way to school. For example, students attending an *Grundschule* visited in Central City often walk past a sex shop which is located only half a block away from the school. Among other things, pornographic pictures are featured in the shop window. Teachers were generally at a loss for solutions to the serious and widespread problem of sex and violence in the media. A teacher at a *Haupt/Realschule* shrugged, saying, "Violence is a part of our media culture and it seems, unfortunately, like it is here to stay."

While the extent of violent content in the media was most often criticized, teachers, and parents also complained that the mass media, in and of itself, exerts a negative influence on children. Namely, the media cause over-stimulation, erode the capacity for critical thought, and lead to over-consumption. The father of an eighth-grade *Gymnasium* student proclaimed that "television castrates the imagination." Others concurred with his view. Further, he added that one of the greatest problems facing German youth was the "lack of opportunities for 'real' communication between people," a situation brought on by the mass media which only allows for "indirect" communication. These negative effects of the media, especially television and video, he said, pertain to the medium itself and are not dependent on content. Television is a passive form of receiving information, which dulls creativity regardless of the quality of programming. However, the content may have its own harmful effects. For example, he said that television promotes an "advertising culture, where consumption is valued above all else, leading to the elitist attitude that you have to look a certain way or drive a certain car to be successful."

Many teachers and parents brought up the point that the media dull the capacity for critical thought. In discussing the influence of the media on adolescent school performance, one *Haupt/Realschule* teacher became very animated and exclaimed:

> [The students] *believe* what they see on TV! They think it's all *true*! They have a totally uncritical way of thinking. And they all watch the dumbest shows on the private TV channels and they think that is the truth. I find this terrible!

Another *Hauptschule/Realschule* teacher expressed a similar opinion:

> The biggest problem is that the entire media results in over-stimulation of children. The kids expect to be entertained in school, too. It's like a fast food restaurant. Everything already prepared and in easily recognizable packaging. The problem is that students don't know how to persevere anymore; they are quick to say 'I can't do that' without ever really trying.

Students themselves were very much aware, implicitly if not explicitly, of their position as consumers of mass media and as premiere members of the "information generation." However, students did not display a critical view of the level of violence in the media. While most 12th-graders indicated at least an awareness of a link between violence in the media and aggression in society, eighth-graders often said that their favorite films were action films, where "action" usually also means "violence."

Crime and violence. Violence and vandalism at school have received much attention by the German media and have sparked debate among politicians, educators, parents, and students. While newspaper reports of school violence abound, as do popular accounts of research on school violence ("Gewalt in der Schule" 1994; "Horror aus der Dose" 1991; "Die rasten einfach aus" 1992), researchers themselves are more cautious in sounding the alarm about increasing school violence. For example, the authors of a recent review of literature on school violence and vandalism conclude that one should not start with the general assumption that violence has increased in German schools, and that longitudinal studies which would confirm or deny this assumption are lacking (Hornberg, Lindau-Bank & Zimmermann 1994, p. 360). However, the authors also state that studies do indicate that the frequency of serious, more brutal acts of violence has increased slightly. Teachers also said that violence at school is getting worse:

> Twenty years ago, when I started teaching, if two kids had a fist fight in the school yard, the other kids would grab them, stand between them, and stop the fight. Now, the kids form a circle and surround the two who are fighting, so the teachers can't see, and then cheer them on! (*Haupt/Realschule* teacher)

A survey of principals concerning the degree of violence and vandalism in their schools provides an overview of the frequency of violent acts occurring at schools. The percent of principals reporting "occasional" acts causing bodily injury at their schools was as follows: *Haupt/Realschulen*, 22 percent; *Gesamtschulen*, 20 percent; *Gymnasien*, 7 percent. The percentage of those reporting that acts causing bodily injury occurred "often" at their school was as follows: *Haupt/Realschulen*, 2 percent; *Gesamtschulen* and *Gymnasien*, near 0 percent. Acts of vandalism were reported to occur more frequently

than physical violence at all types of secondary schools, with more than 30 percent of principals reporting "occasional" acts of vandalism at their school, and between 5 and 10 percent reporting frequent acts of vandalism ("Violence in the School: A Problem of the Media" 1994).

Students and teachers indicated that serious acts of violence at school were rare, especially those involving bodily injury. For example, although students at an urban *Hauptschule* said they know other students who occasionally bring knives to school, they do so "just to be cool" and do not use these weapons. Once in a while a student threatens another student with a knife, which teachers subsequently confiscate. No teacher or student at any school type recalled the use of a handgun by a student. However, the same students said they recall a student using a tear gas pistol against a fellow student several years ago. This student was expelled from school.

Verbal harassment is more common than physical violence at school. For example, an eighth-grade student at a *Gesamtschule* said that while she has never been physically threatened at school, she has experienced verbal abuse. A teacher at a vocational *Gymnasium* implied that the students at his school were "above" physical violence: "These students are the kind of kids who use words to fight their battles. They don't often have to resort to fists." However, students from the same school disagreed with this statement; they said that fist fights did indeed occur between *Gymnasium* students, although they usually did not result in serious injury and were more likely to occur between students in grades 5 through 8. A school superintendent is quoted in a recent article as saying that "brutality is not class specific" and can be found at the *Hauptschule*, *Realschule*, *Gesamtschule* and *Gymnasium* ("Horror aus der Dose" 1991, p. 109).

A *Realschule* teacher stressed that "violence" at school (and in society) is often not recognized for what it is. For example, in traffic people get into arguments and no longer know the limits. This is verbal aggression. Moreover, he said that students making fun of other students at school because of their haircut or clothes is a kind of violence.

In addition to violence and vandalism at school, the increasing level of crime in society at large is an issue of concern for many parents, teachers, and secondary school students. The father of an 18-year-old *Gymnasium* student said he fears for his son's safety when he goes out with his friends at night and takes public transportation. Other parents and students voiced similar concerns. Teachers expressed frustration at their helplessness in the face of violence outside of school.

> All I can do as a teacher is manage a morning in the school. If I prevent a fight here, it will occur somewhere else. I am not changing anything in society. The kids today are growing up without responsibility. (*Haupt/ Realschule* teacher in Central City)

Parents, teachers, and students are all the more helpless in the face of violence, which occurs outside of Germany but still has an impact on secondary school students in Germany. Namely, acts of war in other parts of the world leave lasting scars on the many children who have fled their homes and have come to Germany as refugees. This is especially the case for children in Germany from Bosnia. Additionally, those who are not themselves refugees, but who have relatives and friends in Bosnia, bear the burden of watching the ravages of war and the destruction of their former homeland nightly on television. A 13th-grade student at a *Gymnasium* who was raised in Germany but is of Croatian citizenship said his biggest fear is the possibility that "war will break out all over the world."

A *Haupt/Realschule* teacher traced the increasing level of violence in society to the lack of adequate sport and recreation facilities in the major cities. She said that "hanging around" may lead to acts of violence, vandalism, or attacks on foreigners, and used the following analogy to describe the situation of young people who do not have opportunities for recreation:

> It is like an experiment in physics. There is so much frustration and pressure built up inside of students that it has to get out at some point. That's when you hear about attacks on foreigners in the media.

The father of a *Realschule* student concurred with this teacher's view. He attributed the increasing violence to the fact that many cities are closing their youth centers and that young people have lost their interest in the church.

In discussing crime in German society, most students, teachers, and parents were quick to bring up the issue of "hatred of foreigners" (*Ausländerfeindlichkeit*), which has received much media attention both within Germany and abroad. Most students listed "right-wing extremist groups" and "attacks on foreigners" among the most serious current problems in Germany. No student in the present study made any statements in support of such groups. Most students expressed anger and bewilderment that such groups and hate acts exist.

However, not all teachers agreed that "right-wing violence" was the main problem in Germany; rather, some said that violence by extremists is only a recent manifestation of the tendency towards increased violence in society at large. The real problem, according to a teacher at a *Haupt/Realschule*, is violence of any kind, not only racially motivated violence. He spoke of the problem of increasing violence among youth in general:

> Right-wing groups in Germany have received a lot of media attention. But the violence was there long before the media found a name for it. Only with the opening of the [Berlin] wall did we see an increase of hate acts against foreigners, especially in the East. The main thing is that violence-prone youth groups have now found a common enemy—the foreigner. The people who are attacking refugee shelters today were

> attacking each other at soccer matches a few years ago. They are the same people who attack each other in the streets like the gangs in America. They are simply low class, and this type of person has always been prone to violence, in this country and in others.

This teacher disparaged the oft-heard notion that Germany is poised on the way back to fascism. He attributed problems with increasing violence and hate acts against foreigners to the disenfranchisement of entire groups of adolescents. He said that "the true problem is that there is an entire social group that has been left without hope, without a plan, without opportunities." According to this teacher, this social group is comprised largely of kids from the *Hauptschule*:

> In Germany I do not see a country on the road to fascism. Rather, I see an industrial society that has no idea how to handle its own adolescents. And by 'its own adolescents,' I mean the youth of all nationalities who are living in Germany. The Turkish parents are just as baffled by what to do with their teenage sons and daughters as are the Moroccan parents and the German parents.

A teacher at a vocational *Gymnasium* shared this view. Acts of violence, which at first sight appear to be motivated by hatred of foreigners or racism, often turn out to be violence between individuals or groups, regardless of nationality. For example, if two German students get into a fight in the school yard, it is unlikely they will yell at each other, "You lousy German!" However, if a fight occurs between a German and a Turk, one might hear them yell, "You lousy German!" or "You lousy Turk!" at each other. This does not mean, however, that the fight was motivated by racism or national rivalry. One must first recognize a problem for what it is, these teachers agreed, before one can begin to take steps to counter it.

Summary

German adolescents spend a significant portion of their time at school and on school-related activities such as homework. The school day begins between 7:30 and 8:00 a.m. and lasts at least until 1:00 p.m. Students' schedules vary from day to day; however, students in an academic track at the *Gymnasium* or *Gesamtschule* spend an average of 30–40 periods a week in class, where each class period lasts 45 minutes.

Most students complete their homework in the afternoon after eating a hot meal at home. While students in the upper grades at the *Gymnasium* may spend several hours a day on homework, many said they spent less than an hour. Many schools also offer extracurricular activities in the afternoon; however, most adolescents who play sports do so at community sports clubs, not at school. Most teachers, parents, and students felt that schools should offer more extracurricular activities.

Few students work while attending school. The older a student is, however, the more likely he or she will work part time. It is not uncommon for secondary school students to work part or full time during school vacations. In general, working while attending school is discouraged by parents and teachers. Students at the vocational school are an exception; as part of the "dual system," these students work part time as apprentices with local firms while they are attending school.

German adolescents have ample leisure time to spend with peers. Students "hang out" with friends, play sports, go to a bar, café or discothèque, or listen to music during their free time. Many adolescents also spend a significant amount of time with their family.

One of the most frequently cited problems facing adolescents is the situation in many homes where parents do not have time or are not interested in what their children are doing. Teachers emphasized that schools have been forced to assume an increasingly central and important role in the socialization of youth.

Many students consider school to be a burden in their lives and dislike the fact that school is obligatory. Moreover, many students perceive school to be a place where they are judged critically based on performance. However, most students also enjoy learning, meeting peers, and interacting with teachers at school.

A student's motivation to succeed at school is influenced by many factors, including peer support, and parental involvement. Also important is the perceived link between school success and future employment. Motivation to achieve at school becomes strongest during the last few years of secondary school, when students start to examine career options.

Due to the need for credentials for entry into many vocational fields, there is a strong incentive for young people to make career decisions early and to stick to them. Publicly supported aids to vocational decisionmaking are abundant, including government published brochures, career libraries and professional counselors. Many schools also require students to complete a three-week internship with a company at some point in their secondary school years.

Students who wish to study at a university must earn the *Abitur*, the leaving certificate from *Gymnasium*. Alternative pathways to the *Abitur* also exist for adults and graduates of *Hauptschule* or *Realschule*. For many university subjects, a system of entry restrictions known as *numerus clausus* means that only students with above average *Abitur* grades can count on being accepted into a program.

A large percentage of German adolescents enter one of almost 400 apprenticeship programs. During "dual system" apprenticeships, students work more than half time while attending vocational school. Acceptance into many apprenticeships is competitive, especially in banking and insurance. Apprenticeships in these areas are a highly sought-after alternative to university study for many *Abitur* holders, for they lead to excellent job prospects at top firms.

The role that parents play in their children's education differs drastically from one type of secondary school to the next and also varies according to the age of the child. Parents of students who are 18 or older are not directly involved in their child's education, since these students are legal adults. Attendance at parent-teacher nights by parents of *Hauptschule* students is extremely poor, whereas *Realschule* teachers can expect somewhat better attendance. Parents of *Gymnasium* students are most likely to attend parent-teacher nights.

Teachers most often attributed adolescent problems and poor school performance to a lack of parental support or interest. "Neglect" (*Verwahrlosung*) was the word teachers used most often to describe the family situations of troubled students. Some parents and teachers blamed this state of affairs on the ever-increasing number of dual income families in Germany and parents' own lack of discipline or self-control, which leads to children growing up without any sense of responsibility.

German schools divide students into "classes," which usually remain together for many years, thus providing ample opportunities for peer interaction. The "class" system is an attempt to make students feel comfortable in school, especially following the difficult transition from *Grundschule* to secondary school after fourth grade. While students at each type of secondary school do normally develop a sense of group identity, they frequently also form negative stereotypes of students at other types of secondary schools.

The use of alcohol, tobacco, and illegal drugs varies widely, according to the type and location of secondary school and the age of students. Younger students, even at an urban *Haupt/Realschule*, were unaware of drug problems at their school. In contrast, older students at a *Gymnasium* said that "everyone" has smoked hashish. Of particular concern to teachers is the increasing use of the synthetic drug Ecstasy among adolescents, especially at discothèques where Techno music is played. Many students appeared to be unaware of the potentially harmful effects of this drug.

Poor employment prospects in many fields, especially in former East Germany, is a source of frustration and lack of motivation for many adolescents. Teachers believe that a lack of career orientation can lead some young people to join a right- or left-wing extremist group. Increasing violence in society also has a negative influence on adolescents at home and in school. However, while fist fights and verbal harassment are common, serious acts of violence at school involving bodily injury are rare. Even at urban schools in underprivileged neighborhoods, no student or teacher recalled the use of a handgun by a student. Often, teachers attributed the increasing violence among students to the prevalence of violence in the media.

Chapter 5

Teachers and the Teaching Profession in Germany

By: Ute E. Milotich

It is 6:45 a.m., and Brigitte Müller, a math and physics teacher, is eating breakfast. At 7:15 a.m. her husband, a history and German teacher, and her two children leave to bike to a nearby *Gymnasium*. Frau Müller drives to a *Realschule* in a neighboring suburb and arrives at 7:30 a.m., 15 minutes before her first period begins. She walks to the teachers' lounge, checks her mailbox, and picks up photocopies in her locker, which she will hand out during first period. The teachers' lounge is buzzing with activity: colleagues stream into the lounge, quickly gather their teaching material, and converse with other teachers on their way to the classroom. Before leaving the lounge, Frau Müller studies the day's substitute teaching schedule, which is posted on the bulletin board. She is happy to find out that she does not have to cover for an absent colleague today.

At 7:45 a.m. the bell rings and Frau Müller heads quickly to her first eighth-grade math class. In the hallway she says hello to her students and asks them to hurry to the classroom. Frau Müller shuts the classroom door, takes her books out of her heavy briefcase and says "Guten Morgen." She then asks the students to tell her who is absent today, writes the names of the absentees in the class book, and checks the homework assignment from the previous day. The current math topic is one-variable algebraic equations. Frau Müller has brought in her telephone bill, and she has the students work in groups to calculate the per-minute cost of various phone calls. In the last 10 minutes of the lesson, students explain their findings to the class with the assistance of Frau Müller. Shortly before the bell rings, Frau Müller writes the homework assignment for tomorrow on the board. The bell rings, and while the students copy the assignment into an extra notebook for homework, Frau Müller notes the topic of today's lesson and the homework assignment in the class book. The students remain in the classroom and wait for the next teacher, while Frau Müller moves quickly down the hall to teach a ninth-grade physics class. There are 5 minutes between the two class periods. The ninth-graders are already waiting in the hallway for Frau Müller to unlock the physics classroom.

Shortly before 9:20 a.m., when the second class ends, students murmur and rustle their papers, and Frau Müller writes faster on the chalkboard. As the ninth-graders finish writing down the assignment, the noise in the classroom rises, and they pull out their

bread and cheese for a snack, drifting out to the school courtyard for a 15-minute break. Frau Müller finishes writing in the class book for the ninth-grade class and talks briefly to two students who didn't complete their homework assignment. She then gathers her classroom material and takes everything with her to the teachers' lounge.

In the teachers' lounge, Frau Müller puts her things on a long table and gets her mug from the shelf above the sink in the corner. Several teachers are gathered near the coffee machine, and she talks to Frau Sommer, the class teacher for the ninth-grade physics class that Frau Müller just taught. Frau Müller tells her colleague that one student, Andreas, often comes late and disrupts class. While they talk, the principal enters the teachers' lounge, pours himself a cup of coffee, and reminds his colleagues of the upcoming project week. As the break comes to an end, Frau Müller takes some books out of her locker and hurries to teach another eighth-grade math class. Afterwards, Frau Müller has one free period during which she makes phone calls to parents and runs small errands. She drops letters off at the nearby post office and buys bread from the local bakery.

After returning to school at 11:10 a.m., Frau Müller supervises the school yard during the second 15-minute break. She teaches two more math classes until school ends at 1:00 p.m. Before leaving school at 1:20 p.m., she walks again to the teachers' lounge where she leaves books in her locker, makes a few photocopies, and checks her mailbox. By the time she arrives home, her two children have already returned from the *Gymnasium*. She quickly prepares the main meal of the day. Frau Müller and her children sit down to eat at 1:45 p.m.. Her husband does not join the family today because he is attending a monthly conference concerning new developments in his subject area. Today's topic is the reform movement in German orthography. Leaving her children to clean up after the meal, Frau Müller lies down for a short rest before starting on the housework. Her husband returns from school at 4:30 p.m. After a light dinner with her family at 7:00 p.m., Frau Müller spends 1.5 hours in her office at home preparing lessons for the next day.

Introduction

Teachers are central players in any educational system, and a closer examination of their training and their working lives provides important insight into the daily workings of the system as a whole. This study began with some basic questions: Who teaches, how are they trained, what are their thoughts on education, and what is teaching like in Germany? The literature provided initial answers to many of these questions. Through the case study, we were able to gain insight into the daily workings of teachers' lives by talking with the teachers themselves.

Methodology

During the fall of 1994, researchers conducted interviews with teachers and administrators at three sites in Germany. Researchers also observed in classrooms, on school premises, and in everyday settings. All interviews were conducted in German, tape recorded, and later transcribed and translated into English for storage and analysis.

At the primary site, Central City, and at a secondary site, East City, I conducted all of the interviews and made the observations pertaining to the topic of teachers' preparation and teachers' work lives, except for a few interviews at a *Berufliches Gymnasuim,* which were conducted by a German research assistant. Interviews and observations from South City were collected by William Foraker. All the data from the secondary sites pertaining to this topic were included in the analysis and are reflected in this chapter.

In pursuit of information on teachers' preparation and teachers' work lives in the German school system, we conducted 9 interviews at academic high schools, 13 at vocational high schools, 28 at middle schools, and 18 at elementary schools. Of the total interviews pertaining to this topic, approximately 24 were held in East City and 6 in South City. In addition, approximately 35 classroom and general observations were included in the data analysis. Printed information obtained from schools, career-counseling centers, state ministries of education and their affiliated research institutes, and the Conference of Ministers of Education was also integrated into research findings in this chapter.

In most cases, interviews were conducted with teachers whose classrooms we observed. They took place after school or during teachers' free periods. Since most teachers do not have their own office, it was often necessary to search for a quiet space where a confidential interview could be held. Many were at first skeptical and sometimes resentful of the research. A few made it clear that they had been "volunteered" by the principal and wanted to get through the interview as quickly as possible by providing only brief answers to questions. At the *Gymnasien* and vocational schools, teachers were especially critical of the study and research methodology. However, once the ice was broken, teachers were forthcoming in their answers and did not hesitate to express their opinions—negative or positive—on students, colleagues, and the state (or lack) of school equipment. Towards the end of each interview, when teachers were asked whether the interview was also fruitful for them, many pointed out that it was helpful for them to reflect upon their profession and expressed an interest in learning about the outcome of the study.

Math and science teachers whose classrooms were observed said that they were not putting on a show lesson for the interviewer, emphasizing that what was being observed was normal classroom instruction and interaction. In addition to classroom observation, teachers were observed throughout the school day, during interactions with colleagues

in the teachers' lounge and in conferences, and accompanied while they supervised students in the schoolyard during the long break between classes. Teachers were often selected on the basis of availability on the particular day we were visiting and represented a range of engagement from energetic to indifferent.

Research Goals

Interviews were organized around four major themes: teachers' personal characteristics, teacher training and professional development, the profession of teaching, and teachers' working conditions. Under teachers' personal characteristics, questions examined demographics, teachers' motives for choosing their profession, their thoughts on the qualities that make a good teacher, and general attitudes on education. Topics concerning teacher training and professional development included university admission requirements, university studies, and student teaching. In the course of discussing these topics, teachers also offered thoughts on and criticisms of their training. The profession of teaching in Germany was also examined for beginning and experienced teachers. Topics included hiring and advancement procedures, compensation, social status, and teachers' unions, taking special account of the role of teacher as civil servant. Lastly, teachers' working conditions were investigated, including time use and work load, interaction with colleagues, students and parents, school and classroom organization, and stress factors on the job. We paid special attention to the teaching of mathematics and science in the schools we visited.

It was of special interest to see firsthand how the school system and teacher training in the "old states" (former West Germany) have been received and implemented in the five new states since unification in 1989. In the East, change is the key word—not only in schools but in East City itself. One *Grundschule* we visited was formerly a polytechnical school in East Germany. These schools served all children from grade 1 through 10, without formal tracking. With the exception of one *Gymnasium*, researchers were received in East City with more interest than in other cities. Teachers were forthcoming during the interviews, especially at the *Grundschule* and at the combined *Haupt/Realschule*. Principals of these two schools spent a great deal of time comparing the old and new school systems. They both expressed their dissatisfaction with the tracked school system after fourth grade, which was adopted after unification in 1990.

Teachers' Personal Characteristics

Demographics

According to recent statistics (see table 1), over 40 percent of teachers employed in Germany at *Grund/Hauptschulen*, *Realschulen*, and *Gymnasien* in 1990 were between the ages of 35 and 45, another 15 percent were between the ages of 45 and 55, and fewer than 20 percent were under the age of 35. Some regard the current age demographics of teachers at German schools as a problem. They would prefer a mix of young and old

teachers, because students like to have young teachers with whom they can relate. At one *Gymnasium*, for example, all the teachers were over 50, and most had been at that particular school for about 20 years. Teachers there stressed that it will be a problem for the school when the current teachers retire at the age of 60 and a wave of new teachers takes over.

Table 1—Age of teachers employed in Germany at *Grundschule/Hauptschulen*, *Realschulen*, and *Gymnasien* in 1975 and 1990

Age	School Type	1975	1990
under 35	*Grundschule/Hauptschule*	54 percent	9 percent
	Realschule	51	8
	Gymnasium	47	9
35–44	*Grundschule/Hauptschule*	21	48
	Realschule	23	50
	Gymnasium	25	47
45–54	*Grundschule/Hauptschule*	17	35
	Realschule	17	34
	Gymnasium	20	32
55 and up	*Grundschule/Hauptschule*	8	8
	Realschule	9	8
	Gymnasium	8	12

SOURCE: Adapted from Arbeitsgruppe Bildungsbericht 1994, p. 695.

Although the age of the teachers interviewed varied from 28 to 62, the average was 43 years. Due to widespread hiring freezes in the 1980's, a large majority of teachers in the old states are in their forties and fifties. The majority of teachers interviewed fit the national profile of middle- to late-middle-aged. They completed their university training and student teaching during the 1970's and have been teaching an average of 18 years. Moreover, many have taught at the same school for most, if not all, of their careers. A teacher at a *Gymnasium* said that most teachers stay at the same school unless they are promoted to assistant principal or principal and required to transfer to another school. A *Haupt/Realschule* teacher who has taught at several schools criticized the immobility of teachers throughout their careers:

> I think that teachers should rotate from school to school after a certain period of time, so that they get to know other teachers and a different school environment from which they can learn a lot. However, most teachers would not support this idea, since they do not want to leave their familiar environment.

Overall, there were more male teachers interviewed (56 percent) than female teachers (44 percent), although as of 1992, 58 percent of the teachers in Germany were female. The high percentage of male teachers interviewed may be partly explained by the lower number of female teachers in secondary schools; in 1992, women made up only 43 percent of *Gymnasium* teachers, as opposed to 72 percent of *Grundschule* teachers (Bundesministerium für Bildung und Wissenschaft [BMBW] 1993). Differences were also observed in the ratio of men to women in the old and new states. For example, there were more female math and science teachers at the combined *Haupt/Realschule* and *Gymnasium* in the new states than there were at schools visited in the old states. In the combined *Haupt/Realschule* in East City, there were only 2 male teachers out of a total of 24. In fact, female teachers at the *Gymnasium* in East City said that when they travel to their partner school in one of the old states, the mostly male teachers are surprised to meet so many young female math and science teachers. In the eastern states, women made up 66 percent of all *Gymnasium* teachers in 1992, as compared to 38 percent of *Gymnasium* teachers in western states in the same year (BMBW 1993).

According to respondents, there are two major reasons for the high percentage of female teachers in secondary schools in the new states. First, more women than men traditionally chose the teaching profession in former East Germany. Secondly, at the combined *Haupt/Realschule* we visited, most male teachers seized the opportunity 2 years ago and applied to teach at the newly opened *Gymnasium*; more male than female teachers were accepted at the *Gymnasium* and transferred there.

Teaching was often the first choice for a profession by women. Most of the men said that they previously studied a different field, such as economics or law, or sometimes even had completed an advanced degree in mathematics or physics before they decided to become teachers because of good job prospects and job security. Other research on teachers in Germany has also reported that teaching is often regarded as a second-choice profession (Schwänke 1988).

Motives for Becoming a Teacher

Teachers responded with some degree of hesitation when asked about the motives that drive people to become teachers. However, teachers generally named the following reasons for choosing their profession: a desire to work with children or adolescents, flexible working hours and long vacations, and the attraction of job security as a civil servant. *Grundschule* teachers, in particular, emphasized that they like to work with children and help shape children's outlook on life. Others reported being attracted to teaching at the *Grundschule* level because they would rather concentrate on creating a warm and inspiring classroom atmosphere than teaching specific subjects, as would be the case if they taught the upper grades at secondary schools. Moreover, teachers said they believed that students at the *Grundschule* level (6–10 years of age) were easy to motivate, in contrast to older students. *Grundschule* teachers also often said that they

chose their profession because they wanted to combine a career with having a family. Some *Grundschule* teachers previously worked in different professions before becoming teachers. They said that a primary reason for starting over again in teaching was the fact that they could no longer juggle family and career in their previous jobs.

Teachers also stressed that they were attracted to the teaching profession because they believed teaching would be interesting and challenging; teachers must continually deal with different student personalities and situations. Many also emphasized that they had an academic interest in their major subjects and enjoyed conveying knowledge to students.

The flexibility of working hours was especially attractive to teachers; they are able to decide for themselves when and how much time they should devote to preparing lessons or correcting tests. Teachers at vocational schools and *Gymnasien* who previously worked in different professions were quick to point out the benefits of a teacher's schedule. For these teachers, interaction with students as well as flexible working hours were the main advantages of the teaching profession over other vocations, such as working in business management. In addition, vocational school teachers said that they were attracted to teaching by campaigns and incentives aimed at recruiting qualified people from industry into teaching.

Job security also served as a strong motivating factor for choosing teaching as a profession. A female teacher in her mid-forties at a *Haupt* and *Realschule* explained it this way:

> People who become teachers have a need for security. Imagine, as a teacher one is a civil servant and can calculate the exact salary when one turns 55. Teachers can plan their whole professional life in advance. They don't have to risk anything.

The prospect of job security also lured many *Gymnasium* teachers away from an intended career at a university into teaching younger students. The long, uncertain path to obtaining tenure as a university professor in Germany, with its "second dissertation" (*Habilitation*), deterred many from continuing in academia. It was especially common for male secondary school teachers to say they chose a teaching career as an alternative to teaching at a university.

Personal reasons guide teachers into their careers as well. Some female teachers said that they were encouraged by their fathers, who were civil servants and placed a high value on job security. In other cases, the major influence in deciding on a teaching career was the teacher's own experience as a secondary school student. For example, some chose to become a *Haupt* and *Realschule* teacher rather than a *Gymnasium* teacher because as

students they had bad experiences with teachers at the *Gymnasium*. However, some chose to teach at the *Haupt* and *Realschule* because they did not want to spend the time necessary to become a *Gymnasium* teacher, or because they did not want to study and teach academic subjects at a high level.

Overall, the teachers interviewed chose the teaching profession more because they were attracted to the nature of the work than because of factors such as salary or social status. Women, especially those who were *Grundschule* teachers, often entered the profession because of a desire to combine career and family. Whereas at secondary schools, teaching was often women's first choice for a career, female *Grundschule* teachers often became teachers after working in a different profession. Male teachers, on the other hand, often chose the profession as an alternative to a career in law, medicine, or industry because of job security and fewer years of preparatory study.

Qualities That Make a Good Teacher

In the area of teachers' personal characteristics, the question about what qualities make a good mathematics or science teacher turned out to be the most interesting and challenging question. Most suggested that the personal characteristics that make a good math and science teacher are the same as those necessary to be a good teacher in any subject. They also remarked that it takes a certain type of personality to be a good teacher; for example, teachers must have patience, empathy, and understanding for students. *Grundschule* teachers were especially likely to express this belief:

> A good teacher has open ears and a warm heart for children's concerns. A good teacher needs to be able to put herself or himself into kids' shoes; he or she is psychologically trained and knows how kids learn. He or she should be open-minded, open to new ideas which are suggested by colleagues and students. . . . and should always be interested in broadening his or her horizons. (Female *Grundschule* teacher)

Secondary school teachers said that a good teacher needs to be flexible but consistent in many matters and must be able to respond quickly to new situations. A teacher should be able to joke with students, but at the same time set limits. Fairness was often mentioned as an important quality. For example, if students complain that the timing of an examination is not fair, the teacher should reconsider her or his decision. Similarly, good teachers have to be able to admit their mistakes in front of the class. Teachers at a combined *Haupt/Realschule* stressed that, above all, it is crucial for teachers to be human and not to present themselves as an "all-knowing God." In particular, math teachers said they needed to demonstrate extra patience and concern in order to avoid conveying this image to their students:

> Math teachers often have a hard time understanding why a student has difficulty with a math problem. It seems logical and trivial to us teachers. A good teacher tries to explain a math problem in different ways because he or she anticipates problems that students might have. (Female teacher)

All secondary school teachers stressed that they must be knowledgeable in the subjects that they teach and must continuously update this knowledge. Most important, they said, the teacher should be able to convey a complicated idea to students in a clear manner. They also voiced other requisites for a good teacher. Teachers need to be able to explain solutions to problems, while at the same time making the logic behind the solutions transparent to students, so that they can solve similar problems on their own. A good *Grundschule* teacher clearly has the necessary subject knowledge in math, but also knows how to convey this information to students in a clear manner. A mistake or omission during an explanation of a complex problem can confuse and upset students, leading to a lack of motivation for the rest of the lesson. They suggested that good *Grundschule* teachers often use material things, such as cookies or wooden blocks, to provide students with opportunities to experiment and solve the problem on their own. Moreover, the teacher tries to analyze and reconstruct students' mistakes to appreciate their difficulties and gain an understanding of different ways to solve a math problem. *Grundschule* teachers also stressed the importance of offering several activities during the 45-minute period to satisfy children's need for variety and movement.

Teachers at all school types mentioned the importance of being able to visualize math problems and show connections to the real world, explaining that most students have better comprehension when content is presented in a form relevant to their lives. *Haupt* and *Realschule* teachers doubly emphasized that their students, in contrast to *Gymnasium* students, need to have real-life examples in order to concentrate on a given task. *Gymnasium* teachers, on the other hand, thought that while understanding practical applications is important for motivating students in the 5th to 10th grades, it is no longer necessary from 11th through 13th grades at *Gymnasium*.

Most *Haupt* and *Realschule* teachers emphasized that at the *Haupt* and *Realschule*, teaching the subject always comes second to dealing with students as individuals, understanding their interests and concerns and listening to their problems. For example, a good teacher should be able to change a lesson plan if students have an immediate need to talk about a particular issue or interest. Because personal problems become an area of increasing concern when students go through puberty, good teachers should have the foresight to offer help and assistance even to students who want to appear cool and independent and do not ask for it.

In addition, teachers need to have "strong nerves" and "inner stability" in school. Many teachers said that students are difficult in class. As a male physics teacher at a *Gesamtschule* said, "A good teacher has to learn to deal with the frustration and aggression of his students, but at the same time also has to learn to control and deal with his frustrations with students."

One additional qualification for being a good teacher was mentioned by teachers at the vocational school. Due to the practical nature of the curriculum at these schools, many felt it was important to keep abreast of developments in business and industry that will affect their students in their future careers. Teachers at the vocational school said they need to have "both feet on the ground" and should teach their students "practical

communication skills which are valued by the world of business." Many felt that vocational school teachers should gain practical experience before becoming teachers. In addition, they should maintain contacts with the world of employment. In fact, some teachers do so by working for a company during the summer break.

Overall, in discussing factors, which distinguish a good teacher, teachers first mentioned characteristics such as empathy, flexibility, consistency, fairness, and inner stability, and secondly mentioned the importance of knowledge of particular subject matter and of teaching methodology. According to most teachers, the traits, skills and knowledge necessary for good teaching can be acquired, and this is seen as an ongoing process. As one teacher commented:

> I do not think that some people are born to be good teachers. Instead I think that teachers have to like people, and be willing to learn and improve effective teaching techniques. (Female *Hauptschule* and *Realschule* teacher)

This willingness to learn and an openness to new ideas were common themes. Some teachers, in talking about how such learning occurred, referred to journals that they read regularly. Science teachers, in particular, talked about the importance of keeping current with the subject matter. A male in his late forties commented:

> A teacher, especially a science teacher, needs always to be up to date on the latest scientific knowledge. I subscribe to a magazine called *Chemistry* and go to in-service training.

Reading periodicals designed for more general teacher audiences was also mentioned, and two periodicals in particular seemed to be available to many *Grundschule* teachers, one on current pedagogical issues and another that offers examples of lesson units with accompanying worksheets.

In general, teachers seem to expect that they will continue to grow and learn on the job and only rarely did any espouse the belief that individuals are born good teachers. As one *Gymnasium* teacher commented: "To be a teacher is a matter of innate talent. Whoever does not have the talent can learn many things. . . but not everything." Teaching appears to be viewed as a profession in which an openness and willingness to learn is a critical part of success.

Views on the Purpose of Education

Finally, in regard to personal characteristics, we questioned teachers about what they thought was the purpose of education. Whereas secondary school teachers agreed that the purpose of education is to provide students with a broad base of knowledge, in other words, a good general education, the responses of *Grundschule* teachers varied widely. Regarding the purpose of education, secondary school teachers often referred to the

published "mission statement" of their school. With the exception of *Gymnasium* teachers, secondary school teachers based their definition of a general education on the knowledge and skills needed to help students prepare for their future careers. *Grundschule* teachers, in contrast, were more likely to emphasize the social aspects of education, in other words, the need to teach students to learn and work both independently and with others. This may be a reflection of the fact that the official guidelines for *Grundschule* education stress the importance of promoting children's intellectual *and* social development (Kultusminister des Landes Nordrhein-Westfalen 1985).

According to vocational school teachers, one of the teacher's primary tasks is to help students gain needed communication skills and acquire a solid understanding of how businesses are organized. In addition, students need to develop critical thinking skills. During apprenticeships, students are too involved in their daily work to have much of an opportunity to glance beyond their own small world. Some teachers further added that students should be able to profit from their school experiences not only in their future jobs but also in the way they view the world and how they see themselves as human beings.

In accordance with the traditional charter of the *Gymnasium*, that is, preparing students for academic professions, teachers there emphasized the need to convey knowledge and skills for successful university study. Teachers at the *berufliches Gymnasium* felt that students should receive a practical background in business and economics in addition to a general education. Although the central purpose of the *Gymnasium* is academic, *Gymnasium* teachers expressed concern that the *Gymnasium* should also foster the social and individual development of students. One of the teachers interviewed put it this way:

> I think that the notion of *Gymnasium* teachers who just teach their subjects has to change. We need to help students find their way in this complex society and teach them coping strategies.

The traditional difference in the purpose of education between *Grundschule* and the *Gymnasium* was summarized by a male teacher in his early fifties:

> The *Grundschule* teacher understands himself or herself in the sense of a 'socializer,' as the one who integrates the young person into society, whereas the *Gymnasium* teacher understands himself or herself as the transmitter or conveyor of the higher sciences. The *Gymnasium* teacher does not understand his or her role as ensuring that the students will learn something. He or she merely provides the students with opportunities to learn. This is the old Humboldt educational ideal: a broad offering of education from which the student finally recognizes the character of his or her own abilities and talents.

Teacher Training and Professional Development

Overview of Teacher Education Programs

Most interviewed teachers said that their training occurred too long ago for them to recall the program in detail. Moreover, the training system has been subject to a great many reforms, and as a result, teachers said they were not always up to date on current teacher training. Most were quick to add the general comment, however, that the experience was too theoretical and not practice related.

Presently, teachers in all states must complete a 24-month period of student teaching before applying for their first full-time teaching position. In the 1970's, it was possible in some cases for new graduates to take on a permanent teaching position at a school and complete the necessary student teaching seminars while employed. This situation led to quite a different dynamic between teachers and student teachers within a school. For example, a teacher at a *Haupt/Realschule* remembered her first position and compared it with the situation for current student teachers:

> After finishing at the university, I started working as a teacher and also got paid a teacher's salary. In addition, I already had job security and did not have to worry about finding a teaching position. Currently, student teachers do their student teaching and have no idea whether they will be able to work in their profession. This can be quite demotivating.

Presently, it should be noted, secondary teachers with common subject combinations, such as English/German, often have a difficult time finding a teaching position. The demand for particular subject combinations and the grade a student teacher earns at the end of the training phase determine his or her chances of finding a teaching position. Whereas secondary teachers currently face a very tight job market, *Grundschule* teachers are presently in great demand. This is due primarily to higher enrollments in *Grundschulen* and to the large numbers of retiring *Grundschule* teachers.

Changes in teacher education. Some of the changes in teacher training introduced in recent years have resulted from the work of the KMK (Standing Conference of Education Ministers from the German states). Education in Germany is a matter handled individually by each of the 16 states; however, the KMK coordinates the work of the education ministries in each state. In 1990, the KMK agreed on minimal requirements for the number of courses in major subjects and in education and educational psychology required for completion of university teacher training (KMK 1992). This agreement was an attempt to remove obstacles for teachers who wished to transfer to a different state, a problem that arose because of differences in teacher

training programs between states. As an example of minimum requirements, prospective *Gymnasium* teachers are required to take 8 to 10 semester hours in general education and educational psychology, and a total of 120 to 130 semester hours in 2 major subjects, such as math and biology (Bundesanstalt für Arbeit 1991).

Length of teacher training. Teacher training for all types of schools consists of 4 to 5 years of academic training at a university followed by 2 years of student teaching. The minimum length of university studies varies from 3 years (plus an additional year for final examinations) for *Grundschule* teachers to 4 or 5 years (plus an additional year for examinations) for *Gymnasium* and vocational school teachers. However, in many cases, students require more than the minimum number of semesters in order to satisfy all course requirements for certification. After completing all required courses at the university, students finish their university studies with the First State Examination (*Erstes Staatsexamen*) and then undergo 2 years of training as a student teacher before taking the Second State Examination to become a certified teacher.

Types of teachers. In all states, teachers are certified in one of the following areas: *Grundschule* for primary-level teachers for grades 1–4 (1–6 in Berlin and Brandenburg); *Hauptschule* and *Realschule* teachers for grades 5–10; *Gymnasium* and *Gesamtschule* teachers for grades 5–13; vocational-school teachers for grades 10–13; and special education (*Sonderschule*) teachers for all grade levels. In Hessen, Bremen and Hamburg, teachers can be certified for both primary and secondary level (grades 1–10) in their major subject or subjects. Of all these categories of teachers, only special education teachers were not interviewed in this study.

University Studies

Presently, teachers for all types of public schools in Germany complete university training programs. In the past, only *Gymnasium* teachers were trained at universities, while *Grundschule*, *Hauptschule* and *Realschule* teachers were trained at special teacher colleges (*pädagogische Hochschulen*). Most states integrated training for all teachers into university programs during the 1970's and 1980's in the belief that teachers would receive a more solid foundation in major subjects at the university. One consequence of this reform was the fact that *Grundschule*, *Hauptschule*, and *Realschule* teachers received a considerable increase in salary in recognition of their higher degree of training. However, some critics have questioned whether teachers receive an appropriate education at large, overcrowded universities (Führ 1989).

Teacher education programs are fragmented and are found throughout various university departments. Although course requirements and examination regulations for type and level of school are set by state education ministries, students enjoy considerable freedom in choosing individual courses within the required disciplines. Teachers who have recently finished their training said that in the current university system, there is a lack of guidance for students in choosing courses relevant to their future career.

Prerequisites for university programs. The *Abitur*, or comprehensive exit examination at the end of the 12th or 13th grade of *Gymnasium*, is required for university admission. Traditionally, there were no other requirements to enroll in a teacher training program. Currently, however, overenrollment and high numbers of unemployed teachers have led some states to attempt to limit the number of students in teacher education programs. In Baden-Württemberg, for example, only students with above-average *Abitur* grades can count on admission to teacher training programs. Some believe, however, that the *Abitur* grade is not the appropriate criterion by which to select students who are suited for teaching. Instead, many favor the use of specific tests and school internships so that students form a realistic picture of the teaching profession and are able to judge for themselves whether or not they are suited for it. The University of Heidelberg, for example, offers students the opportunity to participate in school internships before they begin a teacher training program (Rauin 1994).

Certification. The Ministry of Education in each federal state sets the basic requirements for certification of teachers in that state. Although the Ministry of Education develops the content of the First State Examination, a separate body, the State Examination Board (*Staatliches Prüfungsamt*), is responsible for administering the exam. As a rule, the First State Examination consists of the following components: a written thesis in one of the student's two major subjects or in general education; a written and oral examination in all of the student's major subjects, including general education; and, in some cases, a practical exam which may also consist of performance evaluations for students concentrating in art, music, physical education, or in technical fields (KMK 1992).

Course requirements. All students must take courses in pedagogy and educational psychology, but other course requirements vary according to the type of school for which students will be certified. Math and science teachers concentrate in their subject areas, but otherwise fulfill the same course requirements as other teachers do for that type of school. While teachers for *Gymnasien* and vocational schools take more courses in each of their two major subjects, *Grundschule* and *Hauptschule* teachers take additional courses in general education. As part of the general education requirement, *Grundschule* teachers take courses in the philosophy and history of education, educational psychology, teaching methodology, didactics, and a basic course in either philosophy, sociology or political science. At the University of Frankfurt, for example, students in *Grundschule* education are required to take a total of 40 semester hours in general education and an additional 40 semester hours in each of their 2 major subjects (Ministerium für Wissenschaft und Forschung Baden-Württemberg [MWFBW] 1994). The course requirements for *Haupt* and *Realschule* teachers are similar to those for *Grundschule* teachers.

Some states, however, stipulate other subjects in which *Grundschule* teachers must concentrate. For example, in Nordrhein-Westfalen, *Grundschule* teachers must concentrate in mathematics and German in addition to their primary subject (Bundesanstalt für Arbeit 1993). The mathematics courses include four semester hours in

arithmetic and four semester hours in geometry. As part of this requirement, students devote one semester hour to practicing previously discussed arithmetic or geometry problems. In addition, students are required to enroll in so-called "teaching methods" courses on selected topics in arithmetic and geometry.

Gymnasium teachers concentrate on two major subjects in addition to general education. University training for *Gymnasium* teachers emphasizes the academic content of subjects to a greater extent than does training for teachers at other types of schools. In the past, this emphasis came at the cost of fewer courses in education. Since the beginning of the 1970's, however, the number of required credit hours in general education has been increased for *Gymnasium* teachers (MWFBW 1994). At the University of Frankfurt, for example, prospective *Gymnasium* teachers take 20–24 semester hours in general education and 64 semester hours in each of their 2 chosen subjects (MWFBW 1994).

Vocational school teachers are required to complete a 12-month internship in business or industry in addition to academic study. Previously completed vocational training (apprenticeship) in a relevant field also fulfills the internship requirement. In addition to a vocational subject, prospective vocational school teachers are required to concentrate on an academic subject, such as biology, chemistry, German, English, religion, or mathematics, and to take courses in general education. For example, students at the Technical University of Darmstadt (Hessen) take a total of 18 semester hours in general education and 60 semester hours in each of their two chosen subjects (MWFBW 1993).

The course requirements, subject combinations, and practical components for future vocational school teachers also vary according to state. However, the KMK has agreed upon general programs of study and examinations in each of the following vocational areas: metalworking, electronics, construction, graphic arts, textile science, biotechnology, chemical technology, economics, public administration, nutrition and home economics, agricultural science, and social science. In some subject areas there has been a deficit of qualified vocational teachers, partly because many students are attracted to more lucrative careers in industry. In an attempt to satisfy the demand for vocational teachers in certain areas, qualified people from business and industry have been recruited and immediately accepted into the second phase of teacher training (Graf & Ronecker 1991).

Students who wish to teach at a *Gesamtschule* complete university programs and are certified at the grade level they plan to teach. There is no university program specific for the *Gesamtschule*. Rather, *Gesamtschule* teachers are trained as *Hauptschule*, *Realschule*, or *Gymnasium* teachers. In a typical *Gesamtschule*, roughly 40 percent of all teachers are certified as *Hauptschule* teachers, 30 percent as *Realschule* teachers, 27 percent as *Gymnasium* teachers, and 3 percent as vocational teachers, special education teachers, or school psychologists (Schulz 1990).

In addition to academic course requirements, all states require a component of practical experience and classroom observation as part of a teacher's university training. The length of the practical component varies from state to state. At the University of Frankfurt, for example, prospective teachers for all school types spend a total of 10 weeks in schools during their university education (MWFBW 1994).

After completing their university studies with the First State Examination, prospective teachers are eligible to begin student teaching. However, according to a recent report, two out of three students who begin university studies in education do not finish with the First State Examination, and quite a few students who finish the First State Examination do not begin the student teaching phase (Rauin 1994).

Criticism of university training. Teachers generally confirmed the findings of several recent surveys on the quality of university teacher education programs, which reported heavy student criticism of the lack of balance between theory and practice in their studies. All of the teachers interviewed, regardless of the type of school in which they worked, complained that their university studies were not sufficiently oriented toward practice. Many *Grundschule* teachers criticized the fact that they had to take many courses of a theoretical nature. One *Grundschule* teacher said that the current student teacher she was working with, learned a level of mathematics which has nothing to do with the *Grundschule*:

> Students should learn how kids learn math and how a teacher develops a unit in math or an interdisciplinary unit, for example. Sure, it is important that students receive a good background in the chosen subjects. However, I think that university studies should be used even more for learning how to approach a lesson.

Hauptschule and *Realschule* teachers also agreed that the teacher training was too theoretical. Many thought that students should be given opportunities to visit schools frequently and also to teach classes during their studies. One *Gesamtschule* teacher said that course offerings at the university should reflect current issues and problems: "I think that teachers should learn coping strategies during their university studies for dealing with difficult students. When I started teaching, I did not feel prepared for dealing with kids with problems."

Gymnasium teachers generally said they were satisfied with the quality and quantity of subject matter learned during their university studies, confirming the findings of previous studies. At the same time, *Gymnasium* teachers described the required courses in education as being of little value (Klinzing 1990).

Despite widespread criticism of university training for teachers, the system has apparently not been changed, and one teacher interviewed speculated on why this might be.

> Students who finish their university studies often are too preoccupied with the reality of teaching to try to make an impact on the existing university training for teachers. Then, once they feel established as teachers, they lose touch with and interest in the university community, so that there is little motivation for them to try to reform university training. In addition, I think that while they are still students, future teachers do not have a good overview of the profession and thus are not aware of what they will need to know as teachers. (*Grundschule* teacher)

Student Teaching

While some informants found the adequacy and usefulness of university studies lacking, the overwhelming majority of informants agreed that student teaching was extremely helpful in preparing them for their profession. Teachers said they experienced a "practice shock" when they started student teaching because of a lack of practical knowledge during their university studies. In fact, all teachers emphasized that student teaching was an extremely stressful time in their lives.

In contrast to teacher education programs at universities, which vary greatly from state to state, student teaching is similar in every state. Prospective teachers, upon completion of university studies, apply at the local education district office (*Regierungspräsident*) for assignment as a student teacher. Future *Gymnasium*, vocational school, *Realschule*, *Hauptschule*, *Gesamtschule*, and *Grundschule* teachers are required to do student teaching for 24 months, during which time they receive remuneration as civil servants in training.

Student teaching programs. Student teaching consists of the following four phases over a 24-month period: an introductory phase over 3 months, during which student teachers spend 10 hours per week in classroom observation or assisted teaching; a differentiation phase over 6 months, including classroom observation and 4–8 hours per week of teaching; an intensive phase over 12 months including 4 hours per week observation and/or assisted teaching and 8–10 hours per week of unassisted teaching; and a period of preparation for the Second State Examination over 3 months which includes assisted and unassisted teaching and observation (Kultusministerium Hessisches 1990).

Students complete their student teaching with the Second State Examination. The examination committee consists of six members and is chaired by a representative or school inspector from the state education ministry. Other members of the committee include the head of the student teaching seminar, the two subject mentors, the principal of the school in which the student did his or her student teaching, and one teacher chosen by the student.

The examination committee's final evaluation is based on the following items: the pre-examination grade, determined by reports by mentor teachers and seminar instructors commenting on the student teacher's overall performance; the grade on a written thesis

on lessons and units that the student teacher has taught; the grade for an oral examination (60 minutes in duration), consisting of questions on methodology, subject-related issues, or school laws and school organization; and the grades on two written lesson plans in two subjects, which are also observed by members of the examination committee. There is no separate written test as part of the Second State Examination. (Kultusministerium Hessisches 1990).

Seminar instructors advise students on the choice of a thesis topic, which is chosen 3 months before the student submits his or her thesis. The thesis is evaluated by two instructors chosen by the head of the student teaching seminar. Each instructor provides a written evaluation of the student teacher's thesis and assigns the student a grade. If the evaluators disagree on the grade, a representative from the education ministry will meet with the instructors and decide which grade is appropriate.

Student teacher responsibilities. Student teachers usually spend between 10 and 12 45-minute periods each week in school observing and teaching classes alone or with the assistance of their mentor teacher. Concurrently, they attend courses in each of their teaching subjects at the state-sponsored seminar once or twice a week. Students have a different seminar instructor for each subject. Students also observe lessons taught by fellow student teachers once a week by traveling with the seminar instructor to different schools. Student teachers are observed and evaluated by seminar instructors about 20 times during the 2 years of student teaching. For each of these visits, the student teacher must prepare a comprehensive lesson plan consisting of these elements: a general discussion of their students' social and intellectual abilities; objectives for the entire lesson unit and for the particular lesson observed; a detailed agenda for the 45-minute period; a rationale for the topic and objectives of the lesson as well as for the particular methodologies, media, and classroom management techniques to be used; a subject matter analysis; and a bibliography of relevant literature (Meyer 1994).

Teachers complained that they had to write long lesson plans justifying every minute of each lesson. According to these respondents, a lesson plan should not be so rigid, since teachers also need to have the flexibility to change a lesson when required. Teachers also said that they felt like they were "putting on a show" during their student teaching experience on those occasions when a seminar instructor observed their lessons. In many cases, teachers confessed that they attempted to conduct the lessons according to the instructor's preferences in order to receive a favorable evaluation. Otherwise, teachers felt they would have received lower grades, which could have significantly reduced their job prospects. In fact, the overall grade from student teaching is the primary criterion used in hiring new teachers when there is a surplus.

Seminar instructors. Seminar instructors are also teachers, normally with several years of teaching experience. Instructors teach courses for student teachers once a week, during which they discuss methodological and subject-related issues pertinent to the particular

school level and subject. They evaluate student teachers' performance during the seminars and also travel to schools to observe, discuss, and evaluate student teachers' performance.

During interviews, teachers said that the quality of their student teaching experience largely depended on the supervising seminar instructors. One *Gymnasium* teacher compared two of his instructors:

> I was lucky to have a seminar instructor in math who was also an excellent teacher. He taught me how to convey complicated mathematical facts to students. In contrast, my trainer in physics was not knowledgeable—he learned from us. I think whether you learn a lot during student teaching all depends on the trainer.

The mentor teacher. In school, each student teacher is assigned by the principal to one or more mentors, usually full-time teachers with many years of experience who volunteer to supervise student teachers. Mentors are only chosen from among those teachers who volunteer. If a student teacher is not content with her or his mentor, she or he may approach other teachers in the school and ask them to serve as a mentor. Provided that the teacher and principal agree, the student may subsequently switch to the new mentor. The mentor's role is to assist student teachers with teaching-related questions, while providing student teachers with opportunities to observe and teach in their classes. Mentor teachers do not receive extra compensation, nor do they normally receive a reduction in their teaching load. In fact, teachers often are hesitant to take on new student teachers, because they may be asked by the school principal to teach as substitutes in other classes, while the student teacher remains in their home class. Many criticized this aspect of student teaching. According to respondents, student teachers should not be required to act as substitute teachers, but rather should join their mentor in team teaching so that they can learn from each other, experiment with different methods, and provide additional help for those students who need it.

Mentors are very often ill-prepared for assisting student teachers. In some cases, seminar instructors invite the mentors of their student teachers to attend the seminar and discuss new approaches in teaching methodology. In general, student teachers are faced with the dilemma of having to please the seminar instructor and the mentor teacher at the same time, a feat made difficult by the fact that these two teachers often have very different attitudes toward teaching and different preferences concerning how a lesson should be organized and conducted.

From the mentor's point of view, communication between the student teacher and the mentor is often inadequate. Mentor teachers who were interviewed stressed that a lack of time was the most frequent reason for poor communication. A teacher who had mentored many student teachers and had just begun serving as a seminar instructor voiced this criticism:

> The assigned mentor usually does not have the time really to assist the student teacher. There is not enough time for the mentor and student teacher to coordinate their lesson plans and to talk about teaching styles and the students' behavior. It is crucial that the mentor and student teacher communicate with each other. There needs to be time set aside for reflecting upon lessons which have just been taught. Since I also work as a seminar instructor, I listen to student teachers' complaints. It seems the main problem is a time problem.

In sum, even though teachers criticized their student teaching, they generally regarded student teaching as being the most useful phase of their training in preparing them for their first teaching position. Suggestions for improving the student teaching experience included expanding the number of hours per week spent in the classroom and providing better training for seminar instructors, especially in how to give productive feedback to student teachers.

The Profession of Teaching

The Beginning Teacher

Hiring procedures. After finishing student teaching, beginning teachers apply to the regional school office (*Regierungspräsident*) for employment. Only those wishing to teach at a private school apply directly to the school. While the principal of a school can request that a particular teacher be hired for her or his school, principals do not have the authority to make personnel decisions themselves. The grade earned on the Second State Examination, the demand for teachers at a particular type of school, and the need for teachers of particular subjects are the primary determinants of an individual's chance of finding a teaching position. Depending on demand, teachers may be sent to a school in the city of their first or second choice. If a teacher is sent to a city or school she or he dislikes, the teacher later has the option of applying for a transfer to a different school.

Most beginning teachers are 26 to 30 years old, sometimes older, when they apply for their first teaching position. This is due primarily to the long length of teacher training programs (6 or 7 years, depending on type of school). In addition, beginning male teachers are often older than their female colleagues, because they are required to either serve in the military for 1 year or perform civil service for more than 1 year after finishing secondary school.

Demand for new teachers. The demand for new teachers is strongly influenced by trends in school enrollment as well as other social and political factors. When school enrollments drop sharply, as they did throughout the 1980's, there is an oversupply of teachers and significant unemployment of beginning teachers results. This is heightened by the fact that teachers are civil servants and cannot be laid off. In 1980 the German labor office reported nearly 7,400 fully-trained new teachers who were unemployed.

This figure rose sharply to a high of more than 25,000 in 1985. Then, as enrollments rose, especially at *Grundschulen*, the number of unemployed teachers began to decline, reaching about 13,200 in 1992 (KMK 1993a, 1993b). Currently, teachers at *Grundschulen* and teachers of the middle grades at secondary schools are in demand, and have little problem finding a position.

Mentor and support systems. Most teachers were of the opinion that a "mentor" or master teacher who guides and assists new teachers was neither necessary nor desirable. When asked about mentors, teachers often referred back to their student teaching. After 2 years of student teaching under the supervision of mentors, most respondents said that they were ready to teach on their own. Some suggested that a reduction of the teaching load for beginning teachers would be more appropriate than assigning a master teacher. Teachers said that the first year of teaching was hard, because they had to cope with a full teaching load in contrast to only 12 periods a week during their years of student teaching.

The potential drawbacks of a mentor system were emphasized by many teachers:

> I think that a new teacher should *not* have a mentor. Every teacher has a different teaching style and personality. There is the danger that the new teacher will try to copy teaching methods as well as personality traits from his or her colleague. (*Grundschule* teacher)

Teachers reported that it is crucial for a beginning teacher to be independent and to be able to try out different teaching styles. Nevertheless, they also believed that a beginning teacher should seek out those colleagues who can help her or him cope with difficulties. Often, difficulties are not related to subject content but rather involve discipline problems in the classroom. Thus, beginning teachers often seek advice and mentorship on an informal level.

Overall, teachers at all stages of their careers lack formal support. According to Terhart (1993), an education researcher, the support system for German teachers during their professional lives is insufficient. This support, in theory at least, could be provided by continuing education and counseling procedures. Lack of such measures frequently results in burnout and high rates of early retirement among teachers. In fact, about half of all teachers retire before they turn 60 ("Hessens fehlgeleitete Lehrer" 1994).

Teachers were not likely to mention a lack of continuing education or counseling in discussing the need for teacher support systems, stressing instead the difficulties of their daily work life, such as large class sizes and heavy teaching loads. Of all respondents, only *Gesamtschule* teachers mentioned a need for counseling procedures for teachers:

> I think that we need more social workers and school psychologists who help not only students but also teachers to deal with problems. Teachers need concrete coping strategies for how to help students.

The Credentialed Teacher

Observations and performance evaluation. Beginning teachers are first appointed to a probationary position, usually of 3 years' duration, during which time they are observed in class by school inspectors and the school principal on several occasions. At the end of the probationary period, teachers in the old states are eligible to become civil servants. In the new states, teachers from former East Germany had to reapply for teaching positions after unification and were observed and evaluated for 2 years before becoming nontenured teachers without civil servant status.

Once teachers become civil servants, they are generally evaluated by school inspectors every 4 to 6 years until the age of 55. Assessment arrangements vary according to the type of school and the individual state. In the *Grundschule* and *Hauptschule* (also *Realschule* in Nordrhein-Westfalen), an inspector from the regional school office evaluates each teacher through classroom observation and an examination of the teacher's written lesson plans and graded assessment of students' work.

After discussing the observations and evaluations with the teacher, the inspector then writes a detailed report, which includes an evaluation of the teacher's subject knowledge, teaching performance, behavior on the job, and overall contribution to the school and community. The teacher has an opportunity to comment on the inspector's evaluation and must sign the report to show that he or she has seen it.

Gymnasium teachers (in Bavaria, also *Realschule* teachers) are usually evaluated by the school principal, although often with the involvement of a subject specialist inspector for the region. The periodic assessment of teachers' performance provides the state with a dossier on each teacher, which is used in considering teachers for promotion and higher salaries (Department of Education and Science 1986). A *Gymnasium* teacher said that teachers take these performance evaluations seriously because of the importance of receiving a strong evaluation for promotion.

What happens if a teacher does not perform satisfactorily or has difficulties in his or her relationship with students? In the very worst case, a teacher may be asked to change schools, but is not fired. According to an assistant principal at a *Gymnasium*, parents are usually the first to complain about a teacher who is not performing satisfactorily. The school principal will then observe the teacher's classes. If no improvement is noticed after discussing his or her observations with the teacher, the principal may then call the regional school office and an inspector will visit the teacher's class. However, it is difficult for a principal or school authorities to take actions against a teacher who is not performing satisfactorily. According to a recent article (Orth 1994), school principals are often hesitant in dealing with a problematic teacher because of concern that the school's reputation will suffer if he or she takes steps against a teacher. In fact, no matter how

unhappy the parents and principal may be with a bad teacher, it is nearly impossible to change a teacher's employment status unless he or she has seriously harmed a student. Several principals interviewed in the present study said that there are always some bad teachers in a school, and that there is little that can be done about it.

The goal of teacher assessment is to encourage performance; however, teachers who have previously worked in industry said that one cannot compare the teaching profession with professions in the private sector, where poor performance may lead to termination:

> I think that future teachers as well as those currently employed should be hired and promoted according to their performance at the university and in the school. I worked in industry before becoming a teacher and if people did not perform according to expectations, they were fired. It is a different story in the schools. Once a teacher becomes a civil servant, he or she can relax. (*Gymnasium* teacher)

Continuing education offerings. There are numerous state-sponsored institutions and academies offering continuing education courses for experienced teachers. On the local and regional level, additional opportunities for taking courses are offered by unions, universities, and miscellaneous private and religious organizations. In total, over 450 German institutions offer courses for teachers. In addition, schools may organize their own continuing training programs as a means of addressing issues of great concern. To this end, schools invite experts to discuss how to tackle particular problems at school (Schulz 1990).

Many teachers referred to comprehensive brochures from state-run education offices describing their course offerings. In addition to these brochures, information about local institutions can be found in teachers' lounges. Courses are taught by instructors from state seminars, professors, or teachers and principals who have special knowledge in areas such as using meditation in the classroom. In general, there is a great variety of course offerings from which to choose to meet the needs of most teachers. Principals or teachers who wish to become principals may choose courses focusing on management. Teachers may select interdisciplinary topics, such as environmental education, or courses in their subject areas dealing with a specific topic or new methodology. Some courses last an entire week and are held in a resort location, whereas others last only an afternoon and are held in a school.

A beginning *Realschule/Hauptschule* teacher commented on the role of continuing education in her school:

> Some teachers always take advantage of continuing education, others never participate. Nobody checks who participates in continuing education. I don't think my school is really interested in who attends these courses. My impression is that quite a few teachers do not take continuing education seriously and only participate because they want to travel and meet other people.

Teachers who wish to participate in continuing education offerings during school hours must apply for permission from the school principal, since other teachers must substitute for a teacher who is absent because of continuing education. In general, a teacher may request up to a week off during a given school year to participate in continuing education programs.

Even in states where participation in continuing education is obligatory, teachers still have considerable freedom of choice:

> Teachers are required to participate in continuing education, but they are not told what courses they should take. There is a principle of free choice in this. The teacher applies to attend courses that interest him or her, and it is very seldom that a teacher does not apply for some sort of course on his or her own. The courses a teacher attends are recorded in his or her file. They are then used in the assessment of the teacher's performance every 4 years. (*Gymnasium* teacher in South City)

Attitudes toward continuing education. Teachers often mentioned a lack of time as a reason for not participating in continuing education programs, which are not obligatory in most states. They said that they only participate if there is a course offered which catches their interest. Teachers with many years of service are apparently much less likely to participate in continuing education than are beginning teachers. As one *Grundschule* teacher remarked informally: "If we don't know how to teach after so many years of service, we're no good."

In contrast to teachers in the old states, teachers interviewed in the new states said that they attend continuing education offerings on a regular basis, because they need to learn about the newest developments in their subject areas. Accordingly, bulletin boards in teachers' lounges provide information about the numerous in-service training opportunities available.

Independent study. Teachers mentioned the importance of independent study and reading, in addition to formal continuing education courses, as a means of keeping abreast of the latest developments in their fields. They said that for the most part, continuing education is done privately by ordering new books and subscribing to magazines. *Gymnasium* teachers in particular stressed that it is important to read about new developments, so that a teacher is not giving students information which is 20 years old. In schools, magazines and books are displayed either in the teachers' lounge or in a separate library. Magazines such as *Mathematik Lehren* (Teaching Math) appear 6 times during the year. Each issue is devoted to a different topic, and articles range from technical mathematical explanations to examples of how to teach a unit and suggestions for interdisciplinary projects. Recent topics have included "Geometry," "Software," and "Math and German."

Grundschule teachers said they subscribe to the magazines *Die Grundschule* (Elementary School) or to *Praxis Grundschule* (Elementary School Practice). In addition to offering concrete examples of lessons or projects units and related worksheets, these magazines feature topical articles on such diverse topics as aggression in the classroom, *Grundschule* reform, creative writing, and arithmetic in *Grundschule*.

In general, experienced teachers viewed continuing education as a commitment to keeping current in their field by reading relevant books and journals. Experienced teachers often expressed an unwillingness to allocate time to attend continuing education courses because of family commitments or other reasons. In contrast, beginning teachers were more likely to participate in continuing education offerings.

Opportunities for Advancement

Opportunities for promotion for teachers are limited. In general, they include the possibility of teachers becoming an assistant principal or principal, accepting a position in the local education office, or becoming an instructor at a state-sponsored seminar for student teachers. In each case, teachers who are promoted retain their civil servant status. Teachers who are not promoted still receive an increase in salary based on number of years of service.

Options for Gymnasium teachers. Of all types of teachers, *Gymnasium* teachers have the most frequent opportunities for promotion. *Gymnasium* teachers, after attaining civil servant status, are given the formal title of "study advisor" (*Studienrat*) instead of "teacher" (*Lehrer/Lehrerin*). A *Gymnasium* teacher may be promoted to head study advisor (*Oberstudienrat*) after 5 years of service. After this, a *Gymnasium* teacher may be promoted to "study director" or "assistant principal" (*Studiendirektor*), and finally to principal (*Oberstudiendirektor*). Promotion not only involves a change of title but also an increase in salary and status (Bundesanstalt für Arbeit 1991).

Options for all teachers. Teachers at all schools may advance within the school hierarchy and receive an increase in salary. Within the school, the highest position, which may be attained, is that of principal. Principals are not specially trained for their position; rather, they are normally teachers who are promoted to this position after several years of service. *Grundschule*, *Hauptschule*, and *Realschule* teachers may become assistant principals or principals at their school or another school of the same type. The appointment of a principal is determined by the faculty of the school and the regional school office, based on candidates' previous performance in managing people and teaching. In addition, the school official (*Schulrat*) schedules a day for visiting the school to observe and evaluate the candidate for promotion. First, the candidate submits a detailed lesson plan and is observed while teaching this lesson. Second, the candidate observes another teacher's class with the school official and is asked afterwards to comment on and evaluate his or her colleague's lesson. Moreover, the candidate must also show competence in facilitating a conference, which the school official attends. At the end of the evaluation visit, the school official informs the candidate whether or not he or she will be considered for the position.

The assistant principal and principal. Principals and assistant principals teach as much as their schedule allows. For example, a principal at a vocational school with around 1,000 students teaches four periods a week. Principals stressed that it is important for them to teach in order to maintain a collegial relationship with other teachers in the school. In addition to teaching, the assistant principal assists the principal with preparing school statistics and other administrative tasks, such as allocating classrooms or coordinating examination schedules. The assistant principal is also responsible for creating schedules for substitute teaching. For example, an assistant principal at a combined *Haupt/ Realschule* said that she starts designing plans for substitute teachers each day at 7:00 a.m., half an hour before first period begins. She mentioned that the substitute teaching schedule is often the source of conflict with other teachers, since most do not want to sacrifice their free period in order to substitute for another teacher.

The typical responsibilities of a *Gymnasium* principal are overall school supervision and administration, including developing a budget. Moreover, the principal is required to observe and evaluate teachers. When asked how often they observe teachers in their schools, several principals admitted, with hesitation, that they attempt to observe classes but often do not find the time to do so until a teacher is being considered for promotion. However, even though the principal is responsible for evaluation of fellow teachers, there is not a great distinction between school administration and school faculty, as members of administration and faculty are all teachers and the great majority are civil servants.

Instructor of student teachers. In addition to opportunities for advancement within the school, qualified teachers may become instructors at state-sponsored seminars for student teachers on a full-time or part-time basis. Although they maintain their position as a school teacher, part-time instructors receive a reduction in their teaching load to compensate for their additional activities. For example, a part-time trainer supervising 10 student teachers receives a reduction of 10 periods in his or her teaching load. However, because there is currently a great demand for seminar instructors, most trainers hold full-time appointments.

To be promoted to a position as seminar instructor, teachers must apply and compete for publicly posted openings. In recent years, due to a high demand for trainers, teachers have also been recommended for vacant positions by former instructors or fellow teachers. A recommendation will be sent to the local and regional school offices. Officials from the school office then observe and evaluate the teacher candidate and make the final appointment decision. Seminar instructors are not required to complete any additional formal training. A *Grundschule* teacher and seminar instructor said: "Basically, we teach future teachers from our own teaching repertoire."

The Teacher as Civil Servant

Most teachers in the old states are civil servants (*Beamte*) with tenure. In Nordrhein-Westfalen, for example, 92 percent of the more than 140,000 teachers are civil servants

with tenure; the rest are nontenured teachers (Schulz 1990). Only German citizens are eligible to become civil servants. Following a decision by the European Union (EU) court in 1986, the German government was required to allow citizens of EU-countries to teach in German schools. EU-nationals, however, cannot become civil servants, and must remain as nontenured teachers. Still, nontenured teachers enjoy most of the same benefits received by civil servants.

Teachers must comply with the general regulations for professional and ethical conduct which apply for all civil servants. Namely, teachers are obliged to maintain impartiality, unselfishness, confidentiality, commitment to community support, and allegiance to the federal constitution. However, there is no code of behavior written specifically for teachers (Schwänke 1988).

The teacher as a civil servant has a long history in the German states. Starting with the Prussians, teachers were assumed to serve the interest of the state. In 1872, teachers at the *Gymnasium* were given civil servant status and later, in the 1920's, this status was extended to teachers at other school types, as well. However, the appropriateness and need for teachers to be civil servants has been challenged from many sides. Leading Social Democratic (SPD) politicians have suggested eliminating the civil servant status for teachers. The primary motivation for taking such a step is economic: the above-average percentage of teachers taking early retirement, the predictable explosion of government spending for pensions, and the wave of teachers in the new states desiring civil servant status are all hotly debated issues among politicians ("Pädagogen müssen nicht Beamte sein" 1994).

Not only politicians and journalists, but also teachers themselves argue about whether or not teachers should be civil servants. Teachers mentioned several reasons for discontinuing their civil servant status:

> Actually, I think it is bad that teachers have job security for their entire career. There is no evaluation of whether someone is doing a good job as a teacher or whether they would be better off looking for another career. I think that this is harmful, not only for the students, but also for the teacher involved. (*Grundschule* teacher)

Currently, the "teacher as civil servant" is an important issue because teachers in the new states are not eligible to become civil servants, unlike teachers in the old states. Most teachers in the new states were concerned that they could possibly lose their jobs in the near future. For example, *Grundschule* teachers in one new state signed an agreement in which they agreed to work part time (a 23-period teaching load) in return for the promise of job security for the following 6 years. *Grundschule* teachers in this state were particularly concerned about job security, because their state plans to eliminate approximately 1,000 *Grundschule* teaching positions in the coming years. Teachers interviewed in the new states were convinced that they would not be granted civil servant status because the government does not have the financial resources to introduce civil servant status for all teachers.

Social Status

The level of respect that teachers are granted in German society is related to their position as civil servants, but depends, according to teachers, on the type and location of school at which a teacher is employed. For example, a *Hauptschule* teacher said teachers are less respected in large cities, because there are more people with advanced degrees than in a small city or village. Teachers also reported a status hierarchy among teachers at different types of schools. They agreed that *Grundschule* and *Hauptschule* teachers had the lowest status of all teachers, *Realschule* and *Gesamtschule* teachers were slightly higher in status, and far above the rest were teachers at the *Gymnasium*.

> Teachers are well respected. It is a profession, which has to a certain extent, an exceptional position [in society]. It is an academic profession. At the *Gymnasium*, the teachers often have their doctorate. As an academic profession, teaching is certainly acknowledged. (*Gymnasium* teacher)

However, not all *Gymnasium* teachers were so confident about their social status:

> I would not say that I am a teacher, because teachers are considered to be the 'fools of society.' Everybody thinks they know exactly what a teacher should be like. They already have their little picture framed in their minds. (Math teacher at a *Gymnasium*)

In general, the *Gymnasium* teachers surveyed identified themselves as a specialist in a subject, such as a mathematician, historian, or physicist, and not primarily as a teacher. For example, one teacher said that if he goes to a party and introduces himself, he will introduce himself as a mathematician rather than as a math teacher at the *Gymnasium*. He said that he does not feel as respected as a *Gymnasium* teacher, since many people believe teachers work only half a day. He wants to be treated and respected as a professional and thus hides the fact that he is a teacher.

A common complaint heard throughout the interviews regarded the stigmatization of teachers as part-time workers. In the eye of the general public, teachers have long vacations (12 weeks in total) as well as afternoons off. Teachers emphasized that although they can structure a large portion of their work time themselves, while they are in school they basically work nonstop in a fast-paced, high-stress environment. They also felt that most people are not aware of how much time they spend at home preparing for their classes and grading exams. They expressed frustration with the expectations placed on teachers and disappointment with what they perceive as declining respect for their profession.

> Teachers are always blamed for everything. How can you decide who is a good or bad teacher? What are the criteria? There are so many expectations it is hard to fulfill them all. Teachers are no longer respected in society the way they used to be. (*Gymnasium* teacher in East City)

The parent of a combined *Haupt/Realschule* student shared this opinion, commenting that "I would not want to be a teacher nowadays. Kids challenge their teachers and do not respect them as much as they used to."

Teachers also saw evidence of dwindling respect in declining financial support for teachers and increased demands from state education ministries.

> It shows in the way the state and communities allocate resources. They always cut down on resources for schools first. The teacher has to deal with the consequences of large class size and a heavy teaching load. If the teacher fails to do a good job, he or she will be blamed for it.

Compensation

Because they are civil servants, teachers' salaries are determined by a national pay scale for civil servants (*Bundesbesoldungsgesetz*). Teachers are paid at the salary levels A–12 to A–16 (about $35,000 to $49,000 annually). Table 2 demonstrates the salary range. *Grundschule* and *Hauptschule* teachers are paid at the A–12 level ($35,000 on average in 1993), *Realschule* and beginning *Gymnasium* teachers at A–13 ($38,000), *Grundschule* principals or experienced *Gymnasium* teachers at A–14 ($40,000), *Realschule* principal or assistant principal at a *Gymnasium* at A–15 ($44,000), and finally, principal at a *Gymnasium* or vocational school at A–16 ($49,000). However, the annual salaries of civil servants also vary according to length of service, marital status, and size of family (Bavarian State Ministry of Education 1993).

A teachers' salary includes the base salary plus a household supplement, usually around 30 to 35 percent of the base salary, which varies according to family status. Teachers with full civil servant status also enjoy good fringe benefits, such as health care, vacation time, Christmas bonuses, and a pension upon retirement. As civil servants, they are also able to take unpaid sabbatical and personal leaves of up to 12 years in duration. This combines to make teaching an attractive option for individuals who wish to spend several years devoted to childrearing with the promise of job security when they wish to reenter the professional world. Civil servants receive a raise for years of service every 2 years until they turn 50, after which their salaries remain constant.

In the new states, teachers now earn 84 percent of what their colleagues earn in the old states. Teachers in the new states complained that they have a heavier teaching load and larger classes than their colleagues in the old states and receive lower compensation.

Table 2—Gross annual salaries of teachers and administrators at various types of schools, according to national pay scale (Bundesbesoldungsgesetz)

Civil Service Rank	Average Salary	Position and School Types
(A-12)	72,800 DM ($35,000)	• *Grundschule* teacher • *Hauptschule* teacher
(A-13)	80,400 DM ($38,000)	• *Realschule* teacher • Beginning *Gymnasium* or vocational school teacher (*Studienrat*) • Assistant principal at a *Grundschule* or *Hauptschule*
(A-14)	84,900 DM ($40,000)	• Principal at a *Grundschule* or *Hauptschule* • Assistant principal at a *Realschule* • Experienced teacher (*Oberstudienrat*) at a *Gymnasium* or vocational school
(A-15)	92,800 DM ($44,000)	• Assistant principal or administrator at a *Gymnasium* or vocational school • Principal at a *Realschule*
(A-16)	102,000 DM ($49,000)	• Principal at a *Gymnasium* or vocational school

NOTE: Adapted from Bavarian State Ministry of Education, 1993. Pay converted according to 1993 purchase power parity (PPP) conversion rate of 2.10 DM per $1, established by the OECD (OECD 1995).

Teachers are also compensated during their 2 years of student teaching. In general, student teachers earn about half of what they will earn as beginning, full-time teachers. They are also considered to be civil servants in training, and as such receive many of the same benefits enjoyed by other civil servants, such as extra compensation for spouse and children and vacation bonus pay. At the lowest end of the pay scale, a single student teacher at a *Grundschule* or *Hauptschule*, under 26 years old, earns just under 1,800 DM ($860) per month. At the highest end of the scale, a married student teacher at the *Gymnasium*, over 26 years old, will earn 2,600 DM ($1,240) per month (Kultusminister Nordrhein-Westfalen 1994).

Retirement. When teachers turn 65 they are eligible for normal retirement; however, many teachers choose to take early retirement and therefore receive a reduced pension. The size of the pension depends on the total number of years a teacher worked. For

example, a teacher with 35 years of teaching experience receives 75 percent of her or his most recent compensation (Schulz 1990). Years spent during university training and directed student teaching also count as a total of 5 years toward retirement.

Teachers' Unions

Teachers have the right to join a union, although they are not allowed to strike because of their status as civil servants. In 1987, about 65 percent of the more than 540,000 teachers in Germany belonged to one of four main teachers' unions. The largest is the Union of Education and Science (*Gewerkschaft Erziehung und Wissenschaft*) [GEW] which has about 200,000 members, of whom 130,000 are teachers or student teachers. The GEW represents educators in many fields, including university professors and technical college teachers, in addition to teachers at public and private schools. The Union of Training and Education (*Verband Bildung und Erziehung*) [VBE] represents 100,000 teachers. Members mainly stem from *Grundschule*, *Hauptschule*, and Sonderschule. The German Teachers Union (*Deutscher Lehrerverband*) [LV] represents 120,000 members. Members mainly stem from *Gymnasium*, *Realschule*, and *Berufsschule*. In addition, there is the Union of Philologists (*Philologenverband*), which is aimed at *Gymnasium* teachers.

Unions lobby for the professional, economic, legal, and social interests of their members. Union delegates attend meetings at state education ministries regarding teacher training and working conditions, although all decisions are made solely by the ministers of education (Schwänke 1988). Union agendas also include public relations work through the publication of magazines and organization of conferences. The GEW, for example, publishes *Erziehung und Wissenschaft* (Education and Science) which discusses issues pertinent to teaching and education.

Political differences exist between unions. The GEW, for example, supports the *Gesamtschule* as an alternative to the traditional tripartite school system of *Hauptschule*, *Realschule*, and *Gymnasium*, which, the GEW argues, reinforces existing social stratification (Schulz 1990). In the past, the GEW helped reform teacher training by advocating at least six semesters of mandatory university study for all teachers. In addition, the GEW fought for and achieved better compensation for *Grundschule* and *Hauptschule* teachers (Körfgen 1986). Currently, the GEW is demanding, among other things, a reduction in the average teaching load and equal compensation for teachers in the new states.

Teachers' Working Conditions

Teachers' Use of Time

School year. Officially, there are 39 weeks of school per year. However, after subtracting the holidays which vary from state to state, there are between 37 and 38 school weeks remaining (an average of 184 days). Teachers are paid throughout the entire year, including the vacation period of 12 weeks and holidays.

Teaching load. Grundschule teachers have the heaviest teaching load. They were quick to point out that their teaching load of 27 periods per week is too heavy considering that increasing enrollments have resulted in classroom sizes of 30 students in many schools. The teaching load varies slightly from state to state and also depends on the type of school. In schools in Central City, for example, teachers have the following weekly teaching obligations: *Grundschulen*, 27 periods; *Hauptschulen* and *Realschulen*, 26.5 periods; *Gymnasien*, Gesamtschulen and vocational schools, 23.5 periods. When they reach the age of 53, teachers are eligible for a reduction of their teaching load by 1 period per week, at the age of 55 by 2 periods a week, and at the age of 58 by 3 periods a week (Bergman & Ziemer 1993). Teachers who take on extra duties, such as advising students on careers and personal problems, serving as a conflict mediator between students and teachers, or serving as subject leader (informal department head), also receive a reduction in their teaching loads. In some cases, but by no means all, teachers who serve as mentors for student teachers may receive a reduction of 1 or 2 periods per week in their teaching load.

Currently, teachers at *Grundschule* and lower secondary schools visited in one of the new states work part time with a teaching load of 23 periods a week because of a lack of financial resources. On the other hand, at *Gymnasien* in this state, teachers are supposed to teach 24 periods a week but actually teach 27 periods, since there are not enough teachers available. *Gymnasium* teachers were eager to point out that they have a heavier teaching load and larger classes than their colleagues in the old states and are still paid much less for their efforts. In addition, teachers in this new state said that they do not get a reduction of their teaching load if they assume additional responsibilities, such as supervising the science lab.

Daily schedule. When asked to describe a typical working day, most teachers responded by saying that there is "no such thing as a typical working day." Every day is different because of a different teaching schedule. With this in mind, the following schedule from a beginning teacher at a *Haupt/Realschule* shows the typical demands of a teacher's work day:

> Twice a week I have to be at school at 7:45 a.m. That is very hard for me because I have to drop off my four-year old daughter at kindergarten. I have a big breakfast in the morning because there is not enough time to eat during the two breaks from 9:20 till 9:35 and from 11:10 till 11:25. I

usually have a list of things I need to take care of during those breaks. I noticed that I feel more stressed during the breaks. I talk much faster because I do not have enough time. At 1:00, I am done with teaching. Afterwards, I photocopy a few things for the next day. At 1:30, I get into my car completely exhausted. I'm not able to think any longer. I get home, eat something, and play with my daughter. I need time to relax. Around 7:30 p.m., I start preparing class for the next day. At 10:00 p.m., I am done with preparation, read for an hour, and then go to bed.

The schedule of a math and physics teacher at a *Gesamtschule* demonstrates the variability of teacher's daily schedules (figure 1). This teacher instructs students in the 7th through 10th grades. In addition to regular subjects, this teacher also sponsors project work with ninth-grade students on Thursday afternoons.

Figure 1—Sample weekly teaching schedule of a math and physics teacher at a *Gesamtschule*

Time	Period	Monday	Tuesday	Wednesday	Thursday	Friday
7:45–8:30	1	9a math	9a math		8/8 physics	
8:35–9:20	2	10 electronics	9b math	9a math	9 astronomy	7/3 physics
9:35–10:20	3			10b physics		10b physics
10:25–11:10	4	9b math		7/3 physics		9b math
11:25–12:10	5			9b math		office hour
12:15–1:00	6					9a math
1:15–2:00	7				team conference	
2:00–2:45	8	9/4 physics			9 project	
2:50–3:35	9					

NOTE: This teacher receives a reduction in teaching load because of his duties as lab supervisor and as "subject leader" or informal department head. Courses in math and physics are differentiated according to ability level. For example, 9a math refers to a *Grundkurs* (basic-level) math class. Accordingly, 9b refers to an *Erweiterungskurs* (intermediate and advanced-level class).

A math and physics teacher at a *Gymnasium* does not teach additional subjects such as astronomy or projects, in contrast to his colleague at the *Gesamtschule*. Figure 2 shows the weekly schedule for a *Gymnasium* teacher who instructs students in the middle

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grades: two seventh-grade math classes, one eighth-grade math and physics class, and one ninth-grade math class. In addition, he instructs one 11th-grade math class. This teacher teaches a total of 21 periods a week, a reduced teaching load because he is over 53 years of age and because he teaches an upper-level class.

Figure 2—Sample weekly teaching schedule of a math and physics teacher at a *Gymnasium*

Time	Period	Monday	Tuesday	Wednesday	Thursday	Friday
7:45–8:30	1		7/1 math	8 math		
8:35–9:20	2	8 math	8 math	9 math	7/1 math	
9:35–10:20	3	7/1 math	7/2 math	7/1 math	11 math	
10:25–11:10	4			8 physics		8 math
11:25–12:10	5	7/2 math	11 math	7/2 math	7/2 math	
12:15–1:00	6	8 physics	9 math		9 math	9 math

NOTE: This teacher receives a reduction in teaching load because of his age (over 53) and because he teaches an upper-level course.

Although there is no typical work day according to most teachers interviewed, similarities do exist. Teachers start during either first or second periods (first period starts between 7:30 and 8:00 a.m.), and most teachers leave school around noon or 1:00 p.m., except for those *Gymnasium* teachers who also teach upper-level classes on certain afternoons. School principals are the latest to leave school, usually at around 4:00 p.m.

Breaks and free periods during the school day. During the school day, there are several breaks of 15 to 20 minutes. Teachers use these breaks as opportunities to talk with colleagues, make photocopies, or drink a cup of coffee. One or more teachers are assigned to monitor the students in the school yard during the breaks on a rotating schedule.

Teachers usually have lunch at home, since the large majority of schools do not have a cafeteria. However, *Gymnasium* and *Gesamtschule* teachers might leave school to eat lunch and then return in the afternoon to teach or supervise projects. During free periods teachers are not required to stay at school. They can choose to spend this time taking care of errands outside of school, preparing class, or talking to colleagues. Most teachers said they do school-related work at home. Except for the *Gesamtschule*, the schools visited do not provide offices or teachers' rooms equipped with individual desks, so teachers have to carry their books back and forth between home and school.

Time for lesson preparation and conferences. In general, teachers said they spend up to 2 hours preparing lessons every day, though experienced teachers may spend considerably less. However, they also stressed that time for preparation varies and could be more than 2 hours, depending on the tasks at hand, that is, whether or not they have to make up a test. Most teachers said that they work 1 day on the weekend to correct and grade students' exams. In addition to teaching and preparation, teachers are required to participate in meetings several times a month: normally this includes a meeting of teachers of a particular subject (*Fachkonferenz*) and a general meeting (*Schulkonferenz*) for all teachers, the principal, and assistant principal.

Beginning teachers often reported spending the most time at home preparing for school. For example, an art and German teacher in her first year at a *Haupt/Realschule* said she spends about 2.5 hours every evening preparing her classes for the following day. In contrast, teachers with more years of experience do not generally spend as much time preparing lessons. For example, a math and social studies teacher from another *Haupt/Realschule* said that after 15 years of teaching, he does not need to spend time at home preparing class for the next day.

Gymnasium teachers, especially of upper-level courses, emphasized the variability of their schedule because of the amount of time it takes to prepare exams and correct homework for upper-level classes. A teacher who has been teaching for 18 years at a *Gymnasium* described the investment of time required:

> Depending on the task, for example, whether I have to make up a math test or teach algebra problems, I may need up to 5 hours in the afternoon to prepare. It all depends on what needs to be done. Actually, I prepare lesson units at the beginning of the week. When I am done with a unit for my eighth-graders, for example, I start with the units for different classes. I never just prepare one class at a time. I don't think it makes sense to do that.

Teacher Interaction

The teachers' lounge. Teachers share a common room for times before and after school and during the two major breaks during the school day. Often, teachers have a particular place at which they sit and leave their books, worksheets, and the class book. In some cases, there is more than one room designated as a teachers' lounge, depending on the size of the school and whether or not there is a separate smokers' lounge. For example, at one *Gesamtschule*, teachers have, in addition to a common lounge, several departmental lounges with additional work space. Math and science teachers from this school said that they prefer using the departmental lounge to the common teachers' lounge, which they said was too small and crowded during breaks. Teachers said they have a tendency to break up into smaller groups anyway, and thus prefer the smaller,

departmental lounges. However, the disadvantages of separate departmental lounges are apparent for teachers who teach two unrelated subjects, such as biology and English. These teachers are constantly on the move from one department to the next, and often stated a preference for a single teachers' lounge.

During the two major breaks, teachers' lounges are lively and hectic, since teachers come in and out regularly on their way between classes and errands. One *Gymnasium* teacher described the lounges aptly: "Teachers' lounges are usually like waiting rooms in a train station, and very noisy." It was extremely uncommon to see students in the teachers' lounge.

At *Gymnasien*, the teachers' lounge was also the place where I met teachers to schedule appointments for interviews, and during these discussions in the teachers' lounges I was often confronted with skeptical questions about our methodology or research instruments. In fact, one teacher, who introduced herself as a historian rather than a history teacher, was visibly upset at the principal for not informing her previously about the purpose of this study. I sensed that this teacher also resented the intrusion of "outsiders" into what she considered to be a private area.

The *Haupt/Realschulen* as well as the *Gymnasien* visited provided a telephone but no copy machine in the common room; copy machines were often located in a separate room. At the *Gymnasium*, there were few magazines and books in the teachers' lounge; at the *Haupt/Realschulen*, teachers usually go to a teachers' library for books or magazines. In contrast, all of the *Grundschule* lounges were equipped with a copy machine, telephone, and teaching magazines. In the schools visited, none of the teachers' lounges was equipped with computers or fax machines.

Interestingly, the way in which the teachers' lounge was arranged and decorated often mirrored teachers' degrees of interaction and cooperation in each school. For example, one *Grundschule* lounge had an old wooden desk in the teachers' room reserved for a correspondence book in which teachers wrote comments they wished to share with other teachers. Comments often concerned the behavior or performance of a student or students, but also included descriptions of something which teachers experienced outside of school. The bulletin boards in this lounge posted continuing education programs offered as well as the school agenda for the coming months. At this school, teachers also stayed in school in the afternoon to exchange lesson plans and to just sit down to chat with other teachers.

In contrast, in many other schools, the teachers' lounges did not invite one to linger and socialize. Gloomy rooms were furnished with standard school desks and chairs from the 1970's, which were pulled apart, encouraging isolation rather than conversation. At one *Gymnasium*, in addition to continuing education offerings, the bulletin board posted a running list of teachers' complaints about "a lack of good manners in the classroom," "thefts in the school building," and other issues.

In most teachers' lounges, teachers sat in groups. However, some teachers simply walked into the teachers' lounge without greeting anybody, took some books out of their lockers, filled a cup of coffee, and left again. Others began to sigh as soon as they set foot into the lounge—complaining about their students and how poorly they behaved or did on a test. In fact, some respondents complained about their complaining colleagues:

> There are colleagues who just complain about their students during the breaks in the teacher's lounge. It's obvious that those teachers are of the opinion that students are bad and just out there to annoy their teachers. One has to imagine that there are teachers who think that their fifth-graders are mean to them because they are still lively. (combined *Haupt/Realschule* teacher)

Cooperation among teachers. Breaks only 15–20 minutes long allow little time for cooperation among teachers in exchanging lesson plans, examinations, and ideas. Even so, cooperation among teachers varied widely from school to school. In many teachers' lounges, teacher cooperation consisted of terse interactions describing what section they were currently teaching from the math textbook or asking whether the other teacher already made up the next math examination. Teachers appeared to have an overriding concern for making sure they followed the curriculum and stayed on schedule. However, most did not discuss methodology or the media they used to convey particular topics. It seemed that many teachers chose to work alone, because they feared that sharing their teaching techniques and teaching style might provide other teachers with opportunities to attack and criticize them. For that reason, teachers also hesitated to observe each other's class instruction. A *Gymnasium* teacher made this attitude explicit:

> I do not mind having visitors in my class, but colleagues should not evaluate me personally or my teaching style. I do not want to open myself to other teachers, because they could use my openness to talk about me in a bad way.

According to math and science teachers at a *Gymnasium*, it is normal for teachers to work on their own. One said: "I usually do not exchange lesson plans with other teachers. We scientists are individualists." This is not the case at every *Gymnasium* visited. At one *Gymnasium*, a math and physics teacher said that a newly implemented teaching plan required cooperation between teachers of different subjects to develop interdisciplinary lesson plans.

Cooperation among teachers also depended on the age and personalities of the teaching staff in a particular school. At one *Grundschule*, the mostly young and engaged teachers placed heavy emphasis on cooperation and exchange. Correspondingly, the principal scheduled one afternoon a week for all teachers to get together and to talk about projects, lesson units, and students. In contrast, at another *Grundschule* there was a general lack of cooperation among teachers, the majority of whom had been teaching for 15 years or more. Some said that they would like to spend more time in the afternoon

working cooperatively to plan projects and lesson units, but that many of their colleagues left school at noon. Despite their expressed desire for greater interaction, I observed these teachers leaving school as soon as they finished teaching their last class for the day.

Schools in which teachers worked closely together exchanging worksheets and ideas were often located in neighborhoods with a high percentage of refugee and immigrant children. Teachers at these school said that they have to cooperate with colleagues, because they need their support in order to cope with problems in school. They stressed that dealing with common problems fosters teamwork among teachers. Whereas at other schools teachers reported intrigues among colleagues, teachers at schools with a high foreign student population said that, in general, they have more important things to do and have neither the time nor the energy for such intrigues.

In contrast to teachers in the old states, teachers at all schools visited in East City stressed that they work together closely and exchange ideas. This is because teachers are still in the process of learning how to cope with the new school system introduced only a few years ago. Since teachers from former East Germany were forced to reapply for teaching positions after unification, often being sent to different schools as a result, many teachers are still getting to know their colleagues at the new school.

Overall, cooperation among teachers seems to be largely limited to exchanging ideas for tests and examinations and to general discussions about their progress in following the curriculum. This exchange usually takes place during breaks of a few minutes in the hectic environment of the teachers' lounge. Most teachers said they prefer working alone and sticking to their routine at school. The only exceptions to this were seen in schools faced with major changes or difficulties, such as high nonnative German speakers in class or adjusting to a new school system.

School and Classroom Organization

Schools generally have only a small number of administrative personnel. All principals are former teachers who still teach as much as their schedule allows. In addition to one or two secretaries and a janitor (who does not clean but takes care of building maintenance), in most schools several teachers take on additional responsibilities, such as supervising the library or science lab. These teachers receive a reduction in their teaching load in return. Moreover, schools do not generally have a nurse on staff; students who are ill are sent home or, in the worst case, they are sent immediately to a doctor or hospital. Usually, the secretary's office, the principal's office and the teachers' lounge comprise a unit—the principal frequently going in and out of all three rooms.

The class teacher. Most teachers for grades 1 through 10 at all but the vocational schools are assigned a "class" at the beginning of the school year. With the course system beginning in 11th grade at the *Gymnasium*, students no longer belong to one class and thus do not have a class teacher.

A class teacher not only teaches one or more subjects to a particular group of students, but is also responsible for handling administrative issues raised by the students in the class and their parents. In addition, class teachers are responsible for writing grade reports for their classes twice a year. They also supervise the election of a student representative for the class and arrange time at the beginning of and during the school year to meet with their students' parents.

At the *Gesamtschule*, teachers believe that students should remain together as a class as much as possible during their first 2 years in order to provide a supportive, noncompetitive environment and to facilitate the development of friendships. In one of the schools visited, the class teachers for all fifth-grade classes have an office located near the fifth-grade classrooms. In turn, the fifth-grade classrooms are situated in the same hallway around a common area where the recent projects and artwork from fifth-graders is exhibited. In this way, class teachers of the same grade level are able to work closely together.

Class teachers teach as many subjects as possible in one classroom so that students have one teacher who knows them well rather than many teachers. According to teachers, another advantage of having one classroom as a home base is that students do not have to wander from room to room but have teachers who come to them. They reported that they generally enjoy being class teachers, because they know the students in their class and have fewer discipline problems as a result.

The class book. The class teacher is also responsible for the "class book" in which teachers write their daily lesson objectives, topics covered, and homework assigned. The class book is always present in the home classroom, except when the whole class changes classrooms, for example, when they go to chemistry lab or gym. At the beginning of each semester one student from the class is elected to be the "holder of the class book," and is then responsible for carrying the class book between classrooms.

The class book is used in every type of school. It serves as a master document, containing a brief description of what has been taught and assigned as schoolwork and homework for a particular class each day, and often includes page numbers from the textbook used and homework assignments given. The class teacher and school principal are required to examine the entries and sign the class book at the end of each week. In addition to entries describing lessons, the class book contains the course and room schedule for students in the home class, a list of teachers and the subjects they teach for that class, students' home addresses and telephone numbers, an absentee list, and the names of the elected student and parent speakers for the class. Figure 3, illustrates a typical class book.

Substitute teaching. When a teacher is absent, the assistant principal or principal creates a substitute plan. Teachers and student teachers are asked to teach class for their absent colleague. There are no extra "substitute" teachers. Absent teachers are not required to leave prepared lesson plans for teachers who cover class for them. Rather, a teacher who is scheduled to substitute for another teacher usually checks the class book to inform

him or herself on the class' progress. If the substitute teacher is not familiar with the subject to be covered, he or she may simply have students do their homework during class. In some cases, teachers carry books or games for those occasions when they must substitute. While illness is the most frequent reason for teacher absence, teachers may also miss school, with the principal's permission, to attend continuing education programs.

Figure 3—Sample entry in a class book during the third week of the school year from a combined *Haupt/Realschule*

	Period	Subject	Lesson Content	Homework	Absent	Initials
	1	English	a nation of immigrants			
W	2	math	calculating with exponents	p.53, ex.3,7		
E						
D	3	art	color circle			
N	4	social std.	voting			
E	5	biology	Mendel's Law			
S	6	chemistry	Law of Periodicity			
D	7	gym	gymnastics			
A	8	gym	basketball: dribbling techn.			
Y						
	9					
	10					

At secondary schools, teachers who have a free period are the first to be chosen as substitutes during that period. If no teachers are available during the period when a substitute is needed, classes may simply be canceled, especially during the first or last period of the day. Students are then asked to come to school later or to leave earlier on that day. According to a recent German newspaper article, 4 percent of class periods in Central State are canceled due to teacher absence ("Hessens Lehrer sollen mehr arbeiten" 1994).

At *Grundschulen*, if a teacher is sick, the principal develops a substitute plan, which may affect all classes in the school. Since *Grundschule* teachers usually teach all subjects for one class, it is often more difficult to find a substitute to cover for an absent teacher. If a teacher is sick for an entire week, the principal may decide to split the class and send students into other classrooms. In other cases, the principal may change the weekly schedule by canceling certain classes so that a few teachers can take over the duties of the absent teacher. If a teacher is absent for an extended period of time, the principal may call the local school office and ask for an additional teacher.

Teachers at a *Gesamtschule* were surprised to hear that there are special substitute teachers in U.S. schools. According to these teachers, in the past there was a similar system of substitute teachers in Central State. They referred to it, jokingly, as the "firefighter system." Teachers emphasized that it does not make sense to have an outsider come to school and substitute for an absent teacher. However, they also criticized the current system in which any available teacher may be required to substitute in any class or subject. Teachers explained that substitute teaching is effective only if teachers are able to substitute in subjects and at grade levels, which they normally teach. Only when this is the case can substitute teachers be expected to be well prepared and to know at least some of the students they are teaching.

Grading. Teachers maintain a grade book separate from the class book in which they record when and how they assess students' work. In general, teachers give grades for tests, quizzes (especially for languages), class participation, and extra activities, such as oral presentations. Homework is usually not graded.

Teachers do not write formal grade reports for students during the first 2 years of *Grundschule*. However, they do keep records of students' performance on quizzes and tests, which are then used to prepare reports assessing the strengths and weaknesses of each student. In East State, the grades from only two fourth-grade subjects count for admission to the *Gymnasium*: math and German. Many *Grundschule* teachers said they dread making secondary school recommendations for their fourth-grade students. Teachers in East City often said they think that fourth grade is too early to make such an important decision. In contrast, most *Grundschule* teachers in the old states believe that an experienced teacher should be able to determine whether a child should attend *Gymnasium* or another type of secondary school by second grade, saying that some children write more quickly or are able to understand a math problem right away and others cannot.

Teachers at secondary schools, especially at the *Gymnasium*, also said that grading is often difficult. This is the case not just because secondary school students are apt to challenge their grades, but also because of the kind of dilemmas described by a teacher at a *Berufliches Gymnasium*:

> Sometimes I have students whom I cannot pass on to the next grade level. However, it is very difficult to make this decision, especially if I know that this student has already repeated this grade and is threatened with being kicked out of his home.

Another *Gymnasium* teacher who primarily teaches upper-level courses, talked about the severe and negative impact that grading has on teacher-student relationships. He said that at the beginning of the school year, students and teachers usually get along very well. The relationship normally develops nicely until mid-January, when the teacher is required to give students their first major examinations and grades. The relationship suffers at that time because teachers have to evaluate students, and students know how important these evaluations are for their future careers, at least in the upper grades. This

teacher said that a grade of 2.1 (B) as opposed to 1.9 (B+) can sometimes mean the difference between getting into a desired university program or not. Instead of being the coach, the teacher thus becomes the enemy, an obstacle to be overcome on the way to a good *Abitur* grade.

Methods of Teaching Math

A variety of teaching methods were utilized in the math classes observed, including lecturing, interactive discussions, teacher questioning, and pair or group work. No classes were solely lectures, and the majority of classes involved sequenced interactions between teachers and students, one student at a time, as well as paired discussions among students. Students spoke frequently in class and often went to the board to demonstrate work.

Lesson structure. A common pattern in the classes observed was for the teacher to ask questions that would stimulate student thinking and perhaps tap prior knowledge about the topic to be presented, then to pose problems and solicit student responses. Teachers might ask for volunteers to come to the board to work a problem or might call on a particular student. During nearly all the classes observed there were periods when students were talking with their neighbors and working on problems together. Although teachers talked during interviews about their use of group work in math classes, most such activities observed were relatively informal and unstructured. One teacher noted that "I think the discussions I allow can be considered as group work, because every student contributes something to the solution of a math problem."

Classes were typically fast paced and covered a good deal of material. For example, a fourth-grade math class began with students working on problems posted on the board prior to their arrival. As they finished, individuals were expected to move on to a word-problem task. Then students compared their findings and the teacher solicited and posted the answers. Following this, she made announcements that tomorrow they would move on to division and that students having difficulty with word problems should attend the remedial session being offered.

The teacher then helped the class work through the steps in solving a word problem. She asked students to open their math books and to read a word problem independently. She next read the problem aloud and asked students to identify the important information, to underline it, and then to write the underlined facts in their workbook. On the board she repeated the key details of the problem and framed the question:

Given:

adults pay 6 DM
children pay 3 DM
720 tickets for adults
450 tickets for children

Find:

How much money did they collect?

Students were asked to work with a neighbor to solve the problem. While students discussed, calculated, and compared the results, the teacher walked around and assisted those with questions. She then selected a student to write the solution on the board. The student displayed her numerical solution, and then another student was selected to "think of an answer sentence" and responded "The class collects 5,670 DM." The teacher followed this by distributing a number crossword puzzle. She had one student give a brief explanation of such puzzles and then selected two students to demonstrate the puzzles. The puzzle was assigned as homework.

In most classrooms there was considerable emphasis on the production of right answers, and the treatment of students who erred depended on the classroom climate the teacher had created. One teacher in an 11th-grade math class at a vocational school, for example, solicited student responses, listened to students' answers, corrected misunderstandings, and encouraged students through an increasingly difficult series of problems. Participation was highest in this type of class.

In a few secondary classes observed, however, students who gave wrong answers were sometimes jeered by classmates. One teacher was observed mocking student responses and exhibiting frustration at incorrect answers. For example, in an eighth-grade math class at a combined *Haupt/Realschule* the teacher wrote the function '$y=3x$' on the board and asked students how they would draw it. Since no one volunteered, the teacher picked a student. Although this student protested that he could not draw the function, the teacher asked him to come to the board. When the student made a mistake she sighed and said, "Did I do this for nothing? If you still have problems with drawing this kind of function, practice at home. I will not demonstrate it again." When the teacher sought student participation later in the class, no one volunteered.

Public recognition of success and failure was common in the classes observed. In one class, a teacher posted the answer to a problem and then asked for a show of hands to determine who had gotten it right and who had gotten it wrong. Speed was also highly valued and publicly displayed. In one eighth-grade *Gymnasium* class, for example, students who finished early were asked to write their names on the board.

Use of examples. Classroom observations provided considerable evidence of the application of mathematics to "real" situations and the use of concrete examples to illustrate key concepts. In an eighth-grade math class, students computed the portions of a taxi fare in order to understand proportional functions. In a 13th-grade math class at a *Gymnasium*, students were learning integral calculus by calculating the volume of a champagne glass. In a technical math class at a vocational school, a teacher explained how calculating the force of a parallelogram was related to the students' jobs as autobody builders.

Homework. Although teachers typically assign homework, it appeared that these assignments are not formally reviewed by the teachers, but are often quickly checked at the start of class. A teacher at a *Gesamtschule* mentioned that she assigned little homework, because she disliked spending class time reviewing it, but that she told students to study what they did in class at home. The primary purpose of homework in mathematics seemed to be to review and practice problems of the type performed in class. Most classes observed seemed to include some minimal acknowledgment of the previous homework, perhaps a working of a homework problem on the board. Classes often concluded with the assignment of homework.

Perceptions of student abilities. Teachers openly distinguished between "good" and "bad" students, in interviews, in the classroom, and even when introducing students to the interviewer. An eighth-grade *Gymnasium* teacher began by asking, "Here are two good and two bad students. Who do you want to talk to?" During instruction, teachers referred to particular problems as those "for smart students." A female math and physics *Gymnasium* teacher noted that she typically called upon "a good student, because there is not enough time and I also want to encourage the good students and use them as role models." She found it useful occasionally to call on students "who I know will make a typical mistake. With the help of that particular student, I can thus make students aware of common mistakes." In using group work, she reported:

> [I put] good and bad students in separate groups because good students need to tackle difficult problems, whereas bad students need to feel that they can also accomplish a given task. If there are a lot of students who do not understand what is going on, however, I group one good student with four bad students together, so that the good student can explain math problems and thus help to close gaps.

This dichotomous thinking about student abilities was reflected in statements such as "either a student is able to think logically or has difficulties doing so." Good students in math were defined as those who understood the conceptual basis of the material, grasped ideas quickly, finished worksheets rapidly, and got correct answers when solving problems for the class. Several teachers spoke of these traits as heritable. For example, an 11th-grade *Gymnasium* teacher described students who did not do well in class as "students who do not have the genetic disposition for being good students. They are

unable to follow in class. . . . They are not able to make the connections that talented or good students are able to draw." In order to accommodate "good" students who are able to work more quickly, some teachers provide additional problems during class to those who complete the assigned class problems before others.

Teacher-Student Interactions

At the schools visited, the quality of teacher and student interaction varied from very formal to informal. Despite the variability of interaction, some generalizations can be made about teacher and student relationships. Teachers of upper-level classes, for example, address their students from 11th grade through 13th grade by first name and use the formal address (*Sie*). This use of the formal "you" in German language and culture connotes a relationship of mutual respect and also formality.

The relationship between teacher and students also differs from class to class and with grade level, as the following comment by a beginning teacher at the *Haupt/Realschule* shows:

> The relationship I have with my kids in sixth grade is a lot different from that with ninth-graders. As you might have noticed today, I try to speak in a strict tone to my fifth- and sixth-graders and also look at them in a certain way if I disapprove of something. I think that it is important to be strict in the beginning so that students respect one and one's rules. In eighth or ninth grade, the relationship changes. Students would laugh if I would talk to them in the same strict tone I use in my sixth-grade class. I think that I treat older students more like equals.

Differences in teaching style may also influence the quality of teacher-student interactions. *Haupt/Realschule* teachers were observed to use more partner and group work and to explain concepts using concrete examples. One teacher at the *Realschule*, for example, used his phone bills to introduce equations with the variable x. Students in his class worked in groups to calculate phone bills and appeared to have a warm, friendly relationship with the teacher.

Teachers who convey the lessons in an interesting and clear way very often have a good relationship with their students. This is the case even when their teaching style is teacher centered. For example, one *Haupt/Realschule* teacher taught the Pythagorean theorem step by step but also explained the logic behind it and conveyed enthusiasm to her 10th grade students. She summarized the lesson at the end of the period with the help of students. When a student got an answer wrong, he or she was not penalized by the teacher or teased by other students but was asked again to explain the logic behind the answer. The teacher talked clearly and took her time to answer students' questions in a friendly way.

Several *Haupt/Realschule* teachers also mentioned that a teacher's age plays a role in determining the teacher-student relationship. One teacher stressed the need for young teachers since they usually have better rapport with students. According to this teacher, who was in her mid-forties, young teachers have more understanding of and tolerance for students' interests.

A social science teacher at a vocational school suggested that the subject a teacher instructs also plays a role in determining the teacher-student relationship. According to this teacher, teachers of nonvocational subjects at the vocational school have an especially difficult time gaining students' interest and respect. For example, a teacher of theoretical mathematics often finds it difficult to relate to students, because they are usually not interested in the subject. In contrast, most vocational school students are interested in job-related subjects and thus show enthusiasm in these classes, which in turn has a positive effect on the teacher-student relationship.

For the most part, observations at *Grundschulen* revealed a warm and friendly relationship between teachers and students. *Grundschule* students spend most of their school day with one class teacher and thus have many opportunities to develop a close relationship. Nevertheless, teachers pointed out that it is extremely difficult to meet all children's needs during the class period. Often, there are 30 students in the classroom, many of whom are of different ethnic groups whose native language is not German.

Teachers in the secondary school classes observed were more likely to be preoccupied with disciplinary issues and complained of those students who "disturb class and make it impossible to teach." Throughout the interviews, teachers complained of such difficulties with a small set of students and their frustration in coping with these disturbances. In math classes where pair or group work is going on, the noise level was often high, and teachers had varying degrees of success in regaining student attention. In one vocational school math class, students in the back of the room read the newspaper throughout the class, although the teacher gave disparaging looks. He later commented that he permitted such behavior in his class because otherwise "unmotivated students would disrupt class by talking."

Parent-Teacher Relations

Parents have several opportunities to meet their child's teacher(s) throughout the year. The frequency and purpose of parent-teacher meetings varies considerably, according to the particular state, school, and individual teachers.

Parent nights (Elternabende). The class teacher and parents meet during an evening at the beginning of the school year. At the "parent night" the class teacher introduces himself or herself and presents curricular objectives for the school year. Also, the parents elect a representative to the parent council. If a parent becomes dissatisfied with the way a particular subject or topic is being taught, he or she may call on the representative to the parent council and ask him or her to arrange a parent-teacher meeting.

Parent-teacher days (Elternsprechtage). In addition to parent nights, parent-teacher meetings are arranged twice during the school year (usually in January and June or July). Parents make appointments to talk to their child's teacher(s) about their school performance. If a parent cannot make it to the scheduled appointment, he or she can meet the teacher during their office hours, which are held once a week after school. Some teachers complained about parents who ask them to return to school in the afternoon rather than coming to their scheduled appointment.

Parental involvement at the Grundschule. For parents of third- and fourth-graders, additional meetings are scheduled to inform them about secondary school options. There are also opportunities for teachers to meet parents informally, on an unofficial level. For example, at one *Grundschule*, mothers were observed picking up their children after school and using this time to talk with teachers informally. According to most teachers, parents of *Grundschule* students are, with few exceptions, very much involved in their children's education. Some parents who are professionals feel they know the subject matter in *Grundschule* better than the teachers know it and criticize teachers accordingly.

Teachers at one *Grundschule* in East City visit all of their students at home once during the school year to see the social environment in which the children live. Teachers said that these visits are crucial for understanding students' performance and behavior in school. In addition to the other meetings, additional individual meetings with parents are usually arranged when students do not do well in school, have problems with classmates, or lack social skills.

Parental involvement at secondary school. In contrast to parents of *Grundschule* students, parents of secondary school students do not interact as often with their child's teachers. Teachers at secondary schools said that, with the exception of the few parent nights, parents normally do not visit school during the school year. Many parents do not even participate in these few parent nights. A *Haupt/Realschule* teacher stressed that she does not receive much cooperation from parents. She said that when she succeeds in arranging a time to meet parents, rather than discussing issues openly, parents often try to invent a picture of a cohesive family which does not exist in reality.

With the exception of the class teacher, whose responsibility it is to arrange parent-teacher meetings, *Gymnasium* teachers do not generally meet the parents of their students, unless there is a problem. Based on interviews with teachers at vocational schools, it appears that there is even less contact between parents and teachers of vocational school students than occurs at *Gymnasium*. Vocational school teachers said that they often only call parents if students have been absent for an extended period or if they are not doing well in school.

Dealing with Problems

Teachers spoke of a number of problems that they face in the classroom, what they consider to be drains on their energy as teachers, and talked about where they can turn for assistance.

Difficult students. Teachers often laughed when asked to whom they turn if there are problems in class. A typical reaction was: "We have to deal with problems ourselves. Who else?" In general, teachers attempt to deal with disruptive behavior in class on their own. However, if a subject teacher cannot resolve a conflict alone, she or he will inform the classroom teacher about the problem. Together, they decide on appropriate measures to be taken.

If the behavior of a student who has problems does not change, the classroom teacher is asked to contact the school principal. An assistant principal at a *Gymnasium* commented that teachers "do not come early enough" for such assistance, although he acknowledged that the process of referral is lengthy, since classroom teachers are expected to observe a student carefully for eight weeks before complaining to the principal. In consultation with the teachers involved, the principal might decide to move the student to a different class. If this does not help, conferences with all teachers of that grade level are arranged, possibly followed by a school conference. In the meantime, teachers attempt to communicate with the parents of the student with problems. In rare instances, and usually only if a student is involved with drugs or causes serious harm to others, a student might be sent to a different school. Teachers expressed some frustration with the lengthy process necessary to change disruptive student behavior. One commented that "There are not enough measures of consequence enough to counter (disruption) in class. We only contact the office if there are severe disturbances."

Counseling teachers. In some states there are special teachers who serve as counselors for students and parents at school. The number of counseling teachers depends on the school size. For example, a *Gymnasium* with approximately 1,250 students in East City had 3 counseling teachers, each specializing in a particular area, such as drug prevention or career planning. Counseling teachers receive a reduction in their teaching load and have their own offices in which they are available to students and parents for four periods during the school week. Because the time spent making phone calls to the youth office and psychologists are included in these four periods, not much time remains for counseling students.

Students often do not make full use of the counseling services. A counseling teacher at a combined *Haupt/Realschule* said that very few students visit during her office hours. When students do come by, they usually discuss problems with classmates, parents or teachers, and ask for advice. The counselor also tries to ascertain whether a student's

problems are serious enough to warrant a call to the school psychologist at the regional school office for additional help. Although parents are also welcome to come to counseling hours, counseling teachers reported that parents hardly ever make use of this offer.

In schools in Central City, counseling teachers were introduced in many schools as part of a special statewide program to combat student drug use. This program has been in place for more than a decade. However, a counseling teacher at a vocational school said that most students come to see him for counseling on personal problems, and only about 5 percent of students see him because of drug problems. This counselor said he sees between 90 and 100 students during the school year and that he spends as much as an hour and a half a week for up to 6 months with many of these students. This teacher added: "I am not just here for students; I also counsel teachers as well as school administrators if they are having some sort of conflict or problem."

Energy drains for teachers. Most secondary and many *Grundschule* teachers said that they found it difficult to deal with students. *Grundschule* teachers pointed out that children have changed in recent years and that it takes a lot of effort to gain insights into the children, to know what motivates them, and to decide on how they can best react to their students' behavior. According to many *Grundschule* teachers, it is exhausting to teach 27 periods per week to classes of 30 children. There are always some children who have problems and compensate by being the class clown or bully. Teachers said that they feel bad spending so much of their time and energy helping or disciplining those few students and thus neglecting others. Noise in the classroom was often mentioned as a cause of frustration and headaches. To relax students and help them concentrate, some teachers were observed to use meditation music and yoga exercises in class, especially in *Grundschule*.

Discipline is a problem of special concern for teachers who are not class teachers and therefore must change classrooms every 45 minutes. At one *Haupt/Realschule*, teachers spent a great deal of time simply asking students to pay attention and to be quiet. Teachers cannot resolve conflicts readily because there is not enough time between periods in which to talk with students about their problems. As a consequence, many said they often leave school feeling frustrated and dissatisfied because they could not solve a problem.

In comparison with other secondary school teachers, *Gymnasium* teachers were less likely to complain about conflicts with students. Rather, they were more often annoyed by changes in the curriculum at the *Gymnasium*:

> I think that the curriculum is getting worse. This really annoys me. The *Gymnasium* is losing its high academic standard. It seems that the approach is to introduce a mediocre standard for all students instead of really promoting the intelligent students. This is politics. For example, there is a low standard for math until 10th grade. Only in the upper grades is there a higher standard. This is the trend. (*Gymnasium* teacher)

Teachers resort to various means to deal with job-related tension and stress. Organizations such as the state-run Institute of Continuing Education for Teachers offer courses on relaxation techniques, classroom management, and conflict resolution.

Limits to effectiveness. Teacher effectiveness is perceived to be limited by several factors. As mentioned previously, classroom disruptions and student behavior problems are a concern of many. Although teachers seem accustomed to working independently, some expressed a sense that their work would be enhanced by increased interaction with other teachers. A few teachers expressed concern about the fact that, as civil servants, teachers have job security for their entire career. An *Grundschule* teacher who raised this as a problematic issue for the profession said that "there is no evaluation of whether someone does a good job as a teacher or whether they should find another career. I think that this is harmful, not only for that particular teacher, but also for the students." However, the majority of teachers did not see job security as limiting teacher effectiveness.

Two other issues teachers addressed critically were teacher-parent relationships and the division of the day into 45-minute periods.

> I do not like the formality and distance between teachers and parents. There is a separation between school and home, which does not make sense. I think that both sides, parents and teachers, encourage this separation. Teachers are viewed as authorities who are superior. (*Grundschule* teacher)

> I think it is important to have 45-minute periods no longer. By the time you finish taking absentees, talking about homework, etc., the bell is almost about to ring. It is also difficult for kids to change their mind from chemistry to English. I think that we should allow two periods for each subject. (*Gesamtschule* teacher)

Summary

The following issues concerning teachers and the teaching profession in Germany are of particular relevance for discussions of education policy in the United States.

Teachers have a varied schedule, teaching different subjects at different times during the week. *Grundschule* teachers generally teach one class full time for at least 2 years. A first-grade teacher will teach the same class in second grade before moving to a different class in third and fourth grades. In this way, *Grundschule* teachers are able to build close relationships with their students.

Secondary school teachers teach at least two major subjects, usually to students at different grade levels. They generally have few free periods during the school day. Since many schools lack extensive computer facilities and office space for teachers, most teachers prepare their lessons and correct examinations at home. During free periods, teachers are not required to remain at school and may choose to use this time to conduct errands or socialize with colleagues.

Teachers instruct between 23 and 27 lessons of 45 minutes each per week (up to 28 in some states). It is a compact and hectic day. *Grundschule* teachers have the heaviest teaching load and emphasized that teaching 27 periods per week in classes of up to 30 students can be extremely stressful. Most *Grundschule* teachers leave school between 12:00 and 1:00 p.m. The majority of secondary school teachers also leave school by 1:00 p.m., with the exception of *Gymnasium* teachers who teach upper-level courses. Principals generally remain in school until 4:00 p.m. or later.

Students in grades 1 through 10 at both *Grundschule* and secondary schools are divided into "classes" of between 25 and 30 students each. Generally, these classes remain intact from year to year. One teacher, assigned as "class teacher" for each class, not only handles administrative tasks for the class and arranges parent-teacher meetings, but also teaches several subjects. Teachers stressed that the "class" system fosters a sense of camaraderie and belonging among the students in a class, and also serves to minimize discipline problems, since the class teacher knows all of the students well. The class teacher is also responsible for the "class book" in which teachers write the objectives of daily lessons, the topics covered, and the homework assigned. The class book is thus a master document describing what has been taught and assigned to each class.

There are no extra "substitute" teachers. Teachers and student teachers are asked to substitute for absent colleagues. The assistant principal or principal creates a substitute teaching schedule whenever a teacher is sick. A teacher who is scheduled to substitute usually checks the class book to gain information about the class' progress. If no teachers are available during the period when a substitute is needed, classes may be canceled and students sent home.

Teachers commit themselves to a long period of training—a minimum of 6 or 7 years, including student teaching. Student teaching lasts for 2 years, during which time students teach part time and concurrently attend courses at state-sponsored seminars. While teachers were highly critical of their university training, most considered their student teaching experience to be the most valuable and practically-oriented phase of their training. Continuing education offerings are abundant, but not obligatory, in most states.

The options for professional advancement of German teachers are limited. One possibility is to advance within the school administration, becoming assistant principals or principals. They may also become instructors of student teachers or may find positions within the state or regional education ministry.

The large majority of teachers are civil servants with tenure. However, teachers in the new states (former East Germany) have not been given civil servant status. The "teacher as civil servant" is an issue of current debate. While more than half of all teachers belong to one of several national teachers' unions, their status as civil servants prohibits them from striking.

The level of social status and respect accorded to German teachers varies with the type and location of school at which they teach. While all teachers in Germany tend to be respected as highly trained professionals, teacher respondents did report a status hierarchy among teachers at different types of schools. For example, *Gymnasium* teachers tended to be held in much higher esteem than other types of teachers. *Realschule* and *Gesamtschule* teachers had less status, and *Grundschule* and *Hauptschule* teachers had the lowest status of all teachers.

The degree of teacher interaction and cooperation varies widely from school to school, but overall both interaction and cooperation seem to be limited. Teacher-student interaction ranged from formal to informal. At the *Grundschule* warm and friendly relations are mixed with firmness. In secondary schools, particularly at the *Gymnasium*, behavior and discipline become more important issues. Teacher-parent relations also vary widely. Most parents are involved when their children are at the *Grundschule*, but become less so when they move to a secondary school.

Among the most common problems faced by teachers are classroom discipline and difficult students. Many teachers felt that the increase in behavior problems in school was owing to societal and familial pressures that they could do little to counter.

Glossary

Abitur: The school-leaving exam and certificate of the *Gymnasium*. Consists of four semesters of classes and four final exams which cover material from those semesters.

Arbeitsgemeinschaft (AG): Extracurricular project groups in all school forms.

berufliches Gymnasium: A *Gymnasium* with vocational classes and the possibility to complete a standard *Abitur* or a specialized *Abitur* (*Fachabitur*).

Berufsschule: Vocational high school, generally part time.

Förderstufe: "Orientation level," nontracked grades five and six not connected to a specific lower secondary school form.

Gesamtschule (pl. Gesamtschulen): Comprehensive school, grades 5–11 (5–13 in some cases) which are tracked only within some subjects.

Grundschule (pl. Grundschulen): Elementary school, grades one through four.

Grundkurs: basic-level course.

Gymnasium (pl. Gymnasien): Academic high school, college-track education grades 5–13.

Hauptschule (pl. Hauptschulen): Lower-track secondary school, grades 5–9 (5–10 in some states).

Leistungskurs (pl. Leistungskurse): Advanced courses taken in upper-level *Gymnasium*, grades 12–13.

Mittlere Reife: School-leaving certificate achieved after the 10th grade of the *Realschule*.

Numerus Clausus: Latin term for admission limits based on grade point average in the *Abitur* in some subjects in the university system.

Oberstufe: Upper level of the *Gymnasium*, in some states upper level of the *Realschule* as well.

Realschule (pl. Realschulen): Middle-track secondary school, grades 5–10.

Sachkunde: Introductory class on the sciences, both natural and social, at the elementary level.

Sonderschule: Special, separate schools for learning disabled, behaviorally disturbed, mentally, and physically disabled children.

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Appendix A

Abitur Exams from Central City

Abitur exam 1991
Basic Mathematics
Suggestion 1

Problem 1

Given is the function

$$f: x \to f(x) = \arccos(2x^2 - 1);\ x \in D_f.$$

Its graph is referred to as G_f. D_f is the domain for the function f.

1. 1. a) Determine the maximum possible domain for f.
   b) Examine G_f for symmetry.

1. 2. a) Determine whether f is constant at $x=0$.
   b) Calculate $f'(x)$ and determine the area in which f descends strictly monotonously.
   c) Determine whether the limit $\lim_{h->0} f'(0+h)$ exists for $h>0$.
   d) Compare the result of (c) with $\lim_{h->0} f'(0+h)$. Determine if the function f is differentiable at $x=0$.

1. 3. Show that in D_f the following are valid:

$$f(x) = 2 \cdot \arccos x + c_1 \quad \text{for } x > 0$$

and

$$f(x) = -2 \cdot \arccos x + c_2 \quad \text{for } x < 0$$

Give evidence to support this and determine the constants C_1 and C_2.

1. 4. Find the equation for the tangent that intersects the curve at the point with the x-coordinate 0.5.

1. 5. Sketch the graph G_f based on the results of these problems. Set one unit = 2cm.

Problem 2

In a Cartesian coordinate system, the lines

$$l_1: \quad \xi = \begin{pmatrix} 0 \\ 2 \\ 4.5 \end{pmatrix} + \sigma \begin{pmatrix} 3 \\ 1 \\ -1.5 \end{pmatrix} \quad \text{with } \sigma \in \mathbf{R}$$

and

$$l_2: \quad \xi = \begin{pmatrix} 0 \\ 4 \\ 1 \end{pmatrix} + \mu \cdot \begin{pmatrix} 3 \\ -1 \\ -0.5 \end{pmatrix} \quad \text{with } \mu \in \mathbf{R}$$

are given.

2. 1. a) Show that l_1 and l_2 are skewed.

b) Determine the intersection point D of the line l_2 through the x_1-x_2 plane.

2. 2. The plane P_1 is parallel to l_1 and contains l_2 .

a) Find an equation for the normal to P_1 . (Possible result: $2x_1 + 3x_2 + 6x_3 - 18 + 0$)

b) Find the coordinates of the points at which plane P_1 intersects the x and y-axes.

c) Create a sketch in which you show the positions of the lines l_1 and l_2 and the plane P_1 .

2. 3. The plane P_2 is perpendicular to P_1 and contains the line l_1.

a) Find the equation for the normal to P_2.

b) What is the equation for the line of intersection s between P_1 and P_2 ?

2. 4. What is the distance between P_1 and l_1 ?

Work time: 3 hours

Materials allowed: mathematical formula collection and calculator

Abitur exam 1993 Advanced Mathematics Examiner:
Suggestion I

Problem 1:

Given: the family of functions $f(x) = \frac{sx}{e^{tx^2}}$ with $s, t \in \mathbf{R}$

a) Show that $f''(x) = -2stx\,(3 - 2tx^2)\,e^{-tx^2}$, and that all graphs in the group of curves are point symmetric to the origin.
Determine, by using l'Hôpital's rule, the horizontal asymptotes in terms of s and t.

b) Choose s and t so that the inflectional tangent at $x = 1$ has a slope of $-\frac{8}{\sqrt{e^3}}$.

Choose for parts (c) through (e): $s = 4$ and $t = 3/2$

c) Determine the points of intersection with the y- and x-axes as well as the maximum, minimum and inflection points. Draw the graph in the area $-5 \quad x \quad 5$. (Origin in the center; 2cm = 1 unit)

d) Determine the equation of the inflectional tangent in the first quadrant. Where does this line intersect the x-axis?

e) Determine the area under the curve.

f) Given $s = 4$ and t is variable.
Show that the tangents of all inflection points in the first quadrant have the same slope:

$$-8 \cdot e^{-3/2}$$

On what curve do all inflection points lie? (Find the equation!) (1st quadrant!)
Determine whether all other inflection points lie on this line as well.

Draw this curve in the coordinate system of part (c).
Determine the equation of the inflectional tangent in terms of t.
For what value t^* does the inflectional tangent intersect the x-axis at the point S* (4.5 / 0) ?
Draw the corresponding graph in the coordinate system from part (c).
[to check, $t^* = 1/6$]

g) Another line goes through the point S*(4.5 / 0), intersecting the same graph ($t = t^*$). Show that the x value of the corresponding point of intersection x_I fulfills the equation:

$$2x_I^3 - 9x_I^2 + 27 = 0 \quad .$$

Determine the point of intersection using the knowledge that the x value of the inflection point from part (f) also fulfills this equation.
Draw both tangents in the coordinate system from part (c) .
Do these tangents cross at a right angle?

Problem 2: Given the local vectors

$$\mathbf{a} = \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix}; \quad \mathbf{b} = \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}; \quad \mathbf{c}_t = \begin{pmatrix} -5t \\ 6t+7 \\ -t-1 \end{pmatrix} \text{ with } t \in \mathbf{R} \text{ and } \mathbf{q} = \begin{pmatrix} 2 \\ -1 \\ -1 \end{pmatrix}.$$

a) Can $\mathbf{q}$ be expressed using 2 of the vectors $\mathbf{a}$, $\mathbf{b}$, and $\mathbf{c}_t$?
If so, give their corresponding linear combination.
What follows from this for the coplanar relationship between 3 of the given vectors $\mathbf{a}$, $\mathbf{b}$,
$\mathbf{c}_t$, and $\mathbf{q}$?
Express $\mathbf{q}$ using all 3 vectors $\mathbf{a}$, $\mathbf{b}$, and $\mathbf{c}_t$.
Are all vectors $\mathbf{a}$, $\mathbf{b}$, $\mathbf{c}_t$ linearly independent? If so, for what values of t?

b) Find the triple scalar products $(\mathbf{a} \times \mathbf{b}) \cdot \mathbf{q}$ and $(\mathbf{a} \times \mathbf{b}) \cdot \mathbf{c}_t$.
What is the relationship between the vectors?
How can the results be interpreted geometrically?

c) Determine the area of the geometric figure formed by the points O (= origin), A , and B together with
   I) the point Q
   II) the group of points C_t (in terms of t).

d) Determine an equation for a line that is normal to the plane P created by the points O , A , and B. [to check: $x+y+z = 0$]
Give a parameter equation for the line l , on which all points C_t lie.
What is the relationship between l and P ? (Give indicative sizes!)

e) Determine the equation of the group of spheres S_t , whose center points all lie on the line $l': x = \begin{pmatrix} 0 \\ -5 \\ 1 \end{pmatrix} + t \begin{pmatrix} 5 \\ -6 \\ 1 \end{pmatrix}$
and for which the plane P is the tangential plane.
Which sphere S* of this group touches the plane P in T(3 / -1 / ?) ?
What is the distance between the two intersection points of the line l′ with the sphere S* ?

f) Given F_t is the point of intersection of the line AB and a perpindicular line containing C_t. Determine the local vector $\mathbf{f}_t$ in terms of t . For what value t' do the points A , B , C_t , make an isosceles triangle with the base AB ?
In this case, where does the intersection point F′ lie?

Allowed: nonprogrammable calculator
mathematic formula collection Pohlmann or Hornschuh

Subject: chemistry Examiner:

Suggestion 1

The acid-base properties of organic compounds can be applied to the preservation of foodstuffs. The acidity of acids used for preservation and the pH value of the foodstuff decide which substance is best suited to a given foodstuff.

Explain the principal and the causes of acidity based on Brønsted-Lowry's definition.

What effects influence the acidity of a substance?

Derive the acid constants pK_a for the example of propanoic acid.

Table 1:

a) Acidity of propanoic and hydroxypropanoic acids

Acids	pK_a
propanoic acid (propionic acid)	4.87
2-hydroxypropanoic acid (lactic acid)	3.08
3-hydroxypropanoic acid	4.51

b) Acidity of benzoic and hydrozybenzoic acids

Acids		pK_{a1}	pK_{a2}
benzoic acid		4.19	—
m-hydroxybenzoic acid	4.06	9.92	
p-hydroxybenzoic acid (PHB)	4.48	9.32	
o-hydroxybenzoic acid (salicylic acid)	2.97	13.40	

What is the relationship between the pK_a value and "acid strength"?

Explain, using the example of p-hydroxybenzoic acid, that two pK_a values are given for aromatic hydroxy acids, whereas only one is given for the aliphatic acids.

Sodium benzoate is used as a preservative for ketchup, mayonnaise, etc. But of course, only undissociated acids have an anti-microbial effect. What does the benzoic acid molecule / benzoate ion ratio depend on? Use reaction equations in answering the question.

Compare the pK_a values of the given propanoic acids and explain the differences.
As is shown by the pK_a values, m-hydroxybenzoic acid is a stronger acid than benzoic acid, but p-hydroxybenzoic acid is weaker. How do you explain this apparent contradiction?

Salicylic acid is significantly stronger than benzoic acid. Find an explanation for this, paying special attention to the structure of salicylic acid, and taking into account that the 2nd pK_a value is unusually high.

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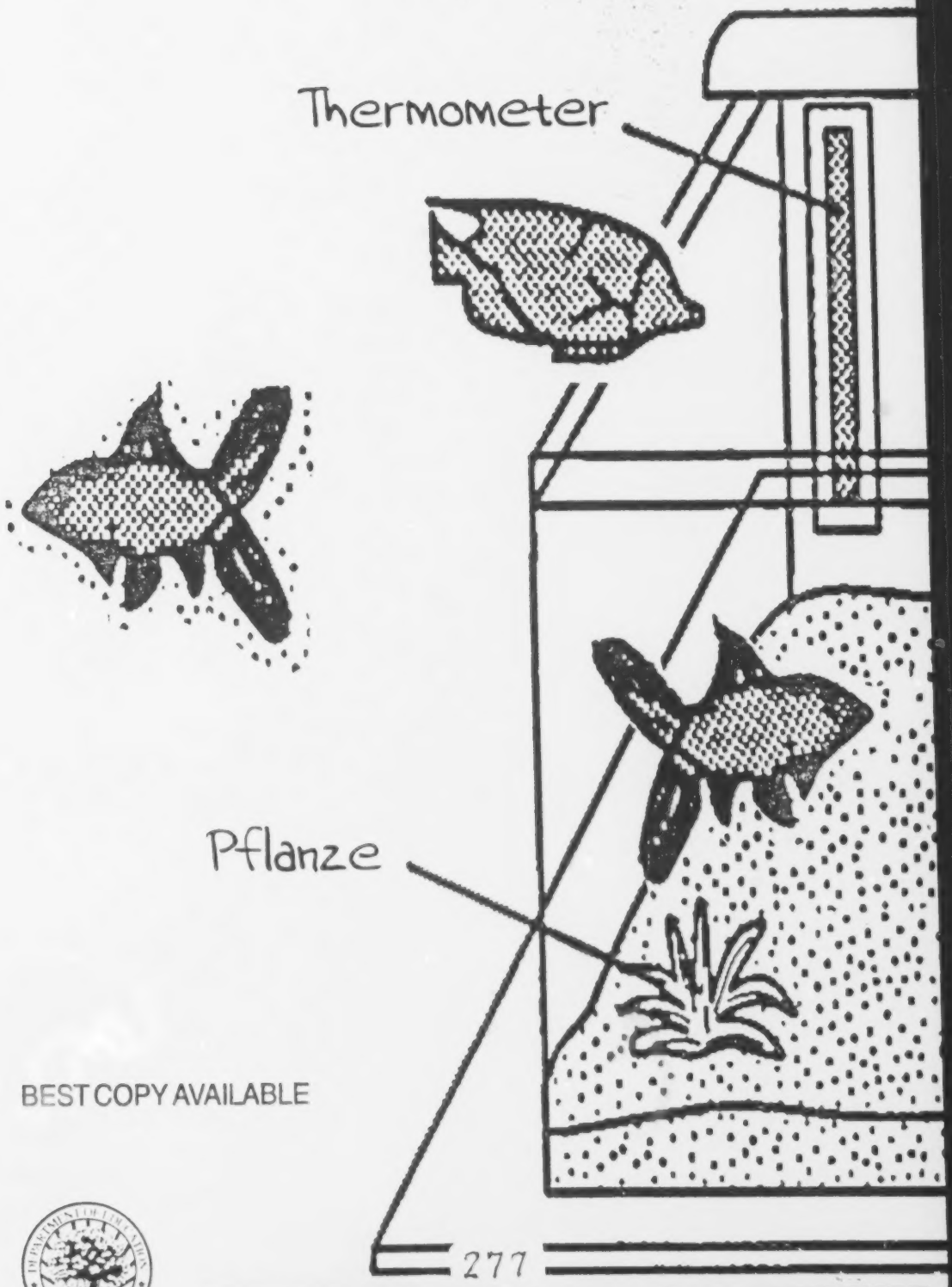

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